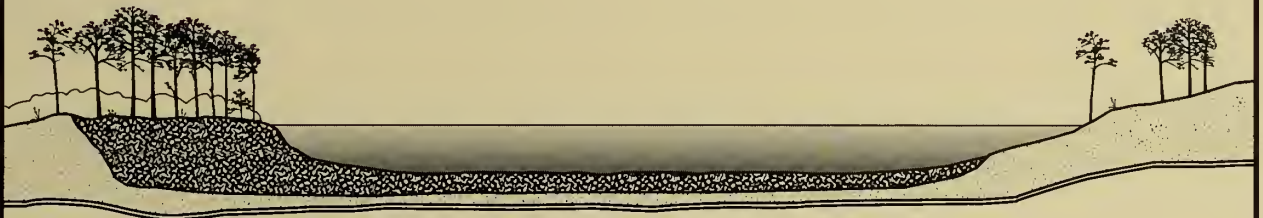



# *Singletary Lake State Park*

## *General Management Plan*





Digitized by the Internet Archive  
in 2012 with funding from  
LYRASIS Members and Sloan Foundation

<http://archive.org/details/singletarylakege00unse>

# **SINGLETTY LAKE STATE PARK GENERAL MANAGEMENT PLAN**

**Department of Environment, Health, and Natural Resources**

**Division of Parks and Recreation**

**Planning and Development Section**

**February, 1996**



# INTRODUCTION

Planning is an essential element of effective and efficient park administration and management. The North Carolina General Assembly acknowledged its importance by passing state parks system legislation that includes planning requirements.

The 1987 State Parks Act (G.S.114-44.7 through 114-44.14) stipulates that a State Parks System Plan be prepared. The plan was completed in 1988 and revised in 1994. It evaluated the statewide significance of each park, identified duplications and deficiencies in the system, described the resources of the system, proposed solutions to problems, described anticipated trends, and recommended means and methods to accommodate trends.

The State Parks Act also requires each park to have an individual general management plan. The general management plans are required to:

*...include a statement of purpose for the park based upon its relationship to the System Plan and its classification. An analysis of the major resources and facilities on hand to achieve those purposes shall be completed along with a statement of management direction. The general management plan shall be revised as necessary to comply with the System Plan and to achieve the purpose of the [State Parks Act].*

The general management plan (GMP) is to be a comprehensive five-year plan of management for a park unit. GMP's function to:

1. describe park resources and facilities;
2. state the purpose and importance of each park unit;
3. outline interpretive themes and propose locations for informational and interpretive facilities;
4. analyze park and recreation demands and trends in the park's service area;
5. summarize the primary laws guiding park operations;
6. identify internal and external threats to park natural and cultural resources, and propose appropriate responses;
7. identify and set priorities for capital improvement needs;
8. analyze visitor services and propose efficient, effective, and appropriate means of responding to visitor needs; and
9. review park operations and identify actions to support efficient and effective park administrative procedures.

This GMP for Singletary Lake State Park, developed with public involvement, is intended to serve these purposes.



# TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	
I. DESCRIPTION OF SINGLETARY LAKE STATE PARK . . . . .	I-1
Location and Access . . . . .	I-1
Land Base . . . . .	I-1
Visitor Facilities . . . . .	I-1
History of the Park Area . . . . .	I-3
II. PARK PURPOSES . . . . .	II-1
Mission Statement of the N.C. State Parks . . . . .	II-1
Singletary Lake State Park Purpose Statement . . . . .	II-1
III. SUMMARY OF INTERPRETIVE THEMES . . . . .	III-1
Primary Interpretive Themes . . . . .	III-1
Secondary Interpretive Themes . . . . .	III-2
IV. PARK AND RECREATION DEMAND AND TRENDS . . . . .	IV-1
Annual Visitation Trends . . . . .	IV-1
Monthly Visitation Trends . . . . .	IV-1
Visitor Information . . . . .	IV-4
Population Trends . . . . .	IV-5
Population Density . . . . .	IV-7
Outdoor Recreation Participation in North Carolina . . . . .	IV-7
Priorities of Public Outdoor Recreation Funding . . . . .	IV-10
Area Outdoor Recreational Opportunities . . . . .	IV-12
V. SUMMARY OF LAWS GUIDING PARK MANAGEMENT . . . . .	V-1
State Legal Mandates . . . . .	V-1
Federal Laws . . . . .	V-4
State Lakes Master Plan . . . . .	V-5
Singletary Lake State Park Deed Restrictions . . . . .	V-5
VI. NATURAL AND CULTURAL RESOURCE MANAGEMENT . . . . .	VI-1
Natural Resource Management Policy . . . . .	VI-1
Natural Communities . . . . .	VI-2
Natural Heritage Program Element Occurrences . . . . .	VI-4
Registered Natural Heritage Area . . . . .	VI-6
Cultural and Natural Resource Management Issues . . . . .	VI-6



VII.	PHYSICAL PLANT INVENTORY . . . . .	VII-1
	Facility Inventory and Inspection Program . . . . .	VII-1
	Singletary Lake State Park Building Inventory . . . . .	VII-2
	Status of Facilities . . . . .	VII-4
	Facility Repair Needs Cost Summary . . . . .	VII-8
	Road and Utility Inventory . . . . .	VII-9
	Major Capital Improvement Project Priorities . . . . .	VII-13
VIII.	PARK OPERATIONS . . . . .	VIII-1
	Introduction . . . . .	VIII-1
	Trail System Needs . . . . .	VIII-1
	Regulating State Lakes — Problems & Options . . . . .	VIII-2
IX.	LAND ACQUISITION NEEDS . . . . .	IX-1
	Land Acquisition Status and Future Needs . . . . .	IX-1
	Land Acquisition Summary Table . . . . .	IX-1
	APPENDIX A: PARK PROFILE . . . . .	A-1



# **I. DESCRIPTION OF SINGLETARY LAKE STATE PARK**

## **LOCATION AND ACCESS**

Singletary Lake State Park is situated in the eastern coastal plain of North Carolina in Bladen County, approximately halfway between Wilmington and Fayetteville. U.S. 701 is the principal access to the region. Singletary Lake State Park is located on N.C. Highway 53, 10 miles southeast of Elizabethtown and six miles east of White Lake (Figure I-1).

## **LAND BASE**

Singletary Lake State Park contains 1,221 acres of land and water. The park land completely surrounds the 572-acre natural lake. Singletary Lake is classified as a Carolina Bay, which is named for the sweet bay, loblolly bay, and red bay found growing around it. In addition to typical bay vegetation that surrounds the lake, the park also contains higher sand ridges that provide habitat for turkey oak, longleaf pine, blueberry, and holly. The oval-shaped lake is approximately 4,000 feet long and is one of the few bays with open water. Similar to other Carolina Bays, Singletary Lake receives almost no overland water flow but relies instead upon precipitation for recharge.

## **VISITOR FACILITIES**

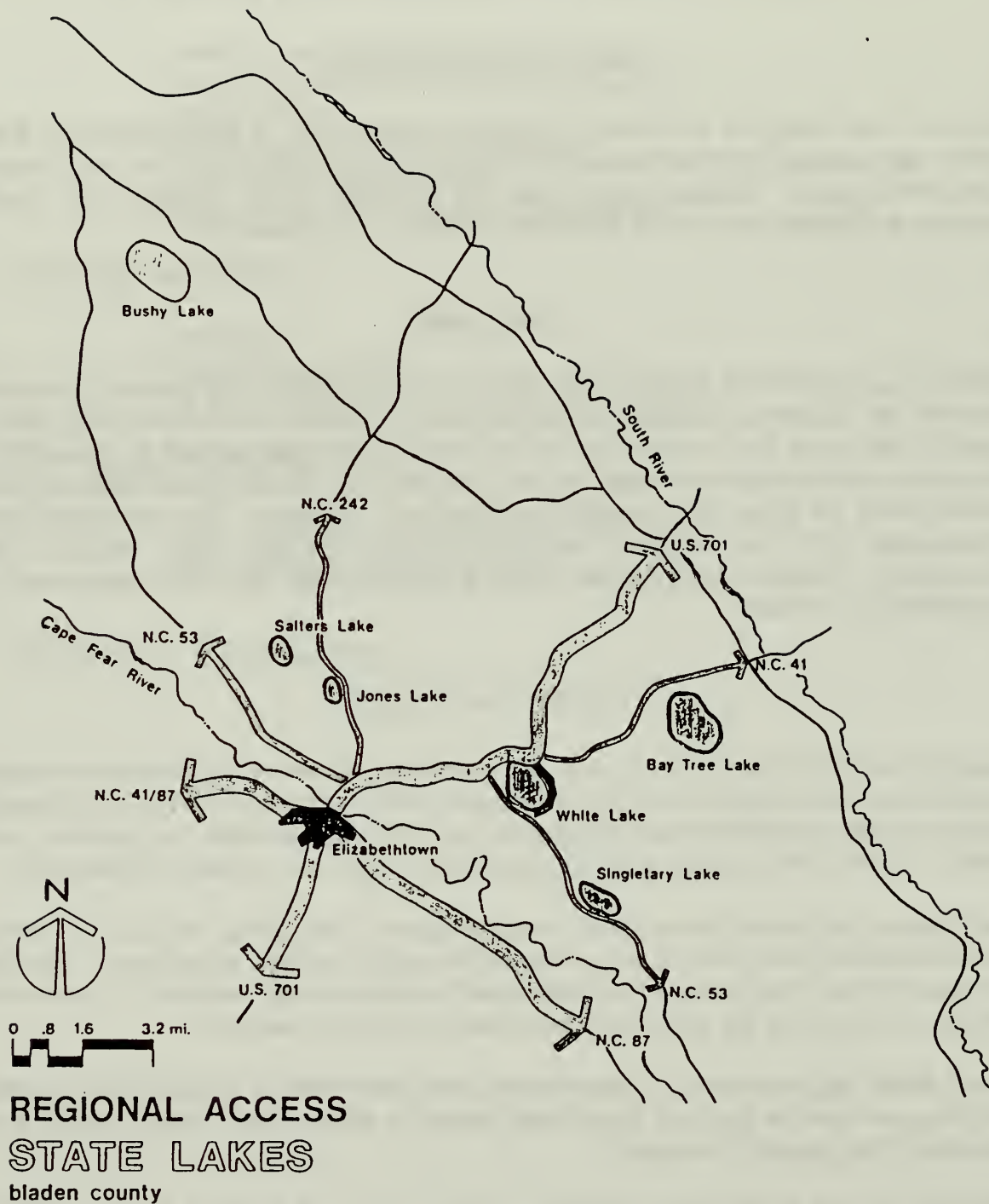
Singletary Lake State Park has two group camps available for use by nonprofit youth and adult organizations. The camps provide a setting for unique camping experiences by offering organized groups overnight interpretation and education and extended-stay recreation in a peaceful, natural setting. Groups must contain at least 20 persons and be part of a verifiable organization.

Camp Ipecac, built under federal public works programs in the 1930s, can house 88 persons. It is not winterized and therefore is open during the spring, summer, and fall only. The camp was named for Carolina ipecac, a low-growing herb common in dry, sandy soil. Extracts taken from the dried roots of the ipecac have been used for medicinal purposes.

Camp Loblolly Bay houses up to 48 persons and is open year-round. It is named for the medium-size evergreen tree that produces showy white blooms in mid-summer. Camp Loblolly Bay is accessible to the physically impaired.

Each of the camps includes a mess hall, campers' cabins, and restroom facilities. Various provisions are furnished, but campers must bring food, cleaning supplies, and bed linens. A basketball goal, horseshoe pit, and volleyball net are located near the cabins. A campfire circle is also found in each camp.

Figure I-1.



A pier more than 500 feet long extends into the lake and provides a place for swimming and sunbathing. Lifeguards are not provided. Boating is available for campers who wish to bring small boats and canoes. The public may fish in the lake when the group camps are not in use by obtaining permission from park staff. Fish populations are low due to the acidity of the water, however.

## HISTORY OF THE PARK AREA

The region was settled during Colonial times, and for approximately 100 years thereafter, landowners practiced subsistence farming along the river lowlands and creek bottoms. Singletary Lake was named for Richard Singletary, who, in 1729, received a grant of land in Bladen County. Longleaf pine, then prolific in the area, were used for the production of naval stores, primarily turpentine, pitch, and timber.

Statewide interest in the Carolina bay lakes emerged in the 1820s. During the 1827-1828 legislature, a bill was enacted that made it unlawful for anyone to record for private ownership the lands covered by the waters of any lake within North Carolina. This law followed the limitation of the private recording of unappropriated marsh or swamplands that was enacted during the previous legislature.

The General Assembly of 1911 passed legislation providing that

*White Lake, Black Lake [now Bay Tree Lake], Waccamaw Lake, and any other lake in Bladen, Columbus, or Cumberland counties containing 500 acres or more shall never be sold nor conveyed to any person, firm or corporation, but shall always be and remain the property of the State of North Carolina for the use and benefit of all the people of the State. (Chapter 8, G.S. 7544)*

This legislation confirmed the status of the 572-acre Singletary Lake as a state-owned, public trust resource. In 1929, the law was amended to include all state-owned lakes having 50 acres or more and to charge the Department of Conservation and Development with administrative responsibility for these newly established recreation areas.

Settlers in the Bay Lakes region generally led lives of marginal subsistence. Due to an influx of laborers who worked in the naval stores, lumber, and cotton industries, the population increased beyond the area's capacity to support it. With the decline of the cotton industry and the exhaustion of the tar, pitch, turpentine, and timber industries, by 1935 a large segment of the population found itself on submarginal land with no means of moving into an area of greater productivity.

In order to create jobs during the Great Depression years of the 1930s, the federal government undertook conservation programs. Under provisions of the Bankhead-Jones Farm Tenant Act of 1937, the federal government purchased approximately 34,544 acres in the Bladen lakes area at an average cost of \$4.51 per acre. The acreage included 51 parcels totalling 9,376 acres acquired via condemnation judgements. The Act authorized the U.S. Secretary of Agriculture to develop a program of land conservation and utilization.



The Resettlement Administration managed the area from 1936 to 1939. During that time, the Resettlement Administration employed Civilian Conservation Corps workers and local residents to construct the Singletary Recreation Center, which included an office, maintenance building, and recreation facilities. Using local talent and materials, they also constructed an infirmary building, 10 cabins, a dining and recreation hall, and a workshop, giving the area a fully operational group camp.

The federal organization for the acquisition and development of submarginal land areas begun in 1934 later became the Resettlement Administration. In January 1937, the Resettlement Administration became a bureau of the Department of Agriculture, and in the fall of that year, the Land Utilization Division was placed in the Bureau of Agricultural Economics. After operating a short time in this bureau, the Land Utilization Division was transferred in October 1938 to the Soil Conservation Service, headquartered in Atlanta. It was through this bureau of the Department of Agriculture that the transfer of responsibility to the state for the administration of the Bladen Lakes Land Use Area was made.

The property was turned over to the state of North Carolina on July 1, 1939 for operation under a lease agreement. In accordance with the terms of the agreement and with the state law providing for its acceptance (Chapter 226, Public Laws of 1935), the Division of Forestry of the N.C. Department of Conservation and Development assumed responsibility for the leased property. Some unfinished projects necessitated the presence of one or more federal officials until January 1940.

The Department was responsible to and reported to the U.S. Forest Service in carrying out the requirements of the lease agreement. The agreement called for the state to use the property for forestry, wildlife, and recreational purposes. The lease required that the state operate, maintain, and administer the existing and any subsequently developed recreational facilities for the use and benefit of the general public. Predominant recreational uses were to include picnicking, camping, bathing, winter sports, use of vacation cabins, and other similar activities. Any recreational facilities that might be subsequently developed were to be consistent with the other uses of the land (Eighth Biennial Report of the Department of Conservation and Development).

Singletary Lake Group Camp was opened for public use during the summer of 1939. It received considerable patronage from Boy Scouts, 4-H clubs, churches, and similar organizations.

The Division of State Parks was established in 1948 and assumed responsibility for management of Singletary Lake and the group camp. In October 1954, the previously leased land was given to the state by the federal government. The deed required that the land be used for public purposes. If at any time the land ceases to be used for such purposes, ownership would revert to the United States.

A second and smaller group camp, Camp Loblolly Bay, was constructed with federal Land and Water Conservation Fund assistance during the 1980s. Use of LWCF funds requires that the park be retained and used for public outdoor recreation purposes.

Singletary Lake State Park continues to be used today by many of the same types of groups that originally used the park. Besides serving as a source of recreation, the park has played other

important roles in the area's history. During the disastrous flood of the Cape Fear River in 1945, the Branch of State Parks cooperated with the Red Cross in disaster relief, using Singletary Lake as a refugee center. During World War II, the area was used by the Anti-Aircraft School from Camp Davis for special training programs.



## II. PARK PURPOSES

### MISSION STATEMENT OF THE NORTH CAROLINA STATE PARKS

*The North Carolina state parks system exists for the enjoyment, education, health, and inspiration of all our citizens and visitors. The mission of the state parks system is to conserve and protect representative examples of the natural beauty, ecological features, and recreation resources of statewide significance; to provide outdoor recreation opportunities in a safe and healthy environment; and to provide education opportunities that promote stewardship of the state's natural heritage.*

### SINGLETARY LAKE STATE PARK PURPOSE STATEMENT

Singletary Lake has a long history of public ownership. In 1827, legislation passed that prohibited the lands covered by the waters of any lake within North Carolina from being recorded for private ownership. In 1911, the General Assembly passed legislation declaring that certain lakes containing 500 acres or more, including 572-acre Singletary Lake, were not to be sold, but should "...always be and remain the property of the State of North Carolina for the use and benefit of all the people of the state." This legislation clearly indicates the public trust nature of Singletary Lake.

In order to create jobs during the 1930s, the federal government undertook conservation programs. Submarginal farm lands in the Bladen County area, including those around Singletary Lake, were purchased. Under management of the Resettlement Administration from 1936-1939, recreation facilities were constructed at Singletary Lake. The area was leased to the state in July 1939, and in October 1954 the land surrounding Singletary Lake was given to the state by the federal government. The deed requires that the land be used for public purposes. In addition, because recreational facilities were constructed with federal Land and Water Conservation Fund assistance, the park must be maintained and used only for public outdoor recreation purposes.

Singletary Lake State Park contains three high quality natural community types: Coastal Plain Small Stream Swamp (Blackwater Subtype); Pond Pine Woodland; and Xeric Sandhill Scrub. The Turkey Oak Registered Natural Heritage Area encompasses 155 acres along the lake's northeast shore. It includes a portion of the sand rim surrounding the large Carolina bay. Species of special interest in or near the registered area include the white wicky (*Kalmia cuneata*), the Venus flytrap (*Dionaea muscipula*), and the red-cockaded woodpecker (*Picoides borealis*). Turkey oak and longleaf pine dominate the sand rim, while pocosin vegetation, including Atlantic white cedar, dominates the shoreline.

Carolina bays are found only in North Carolina, South Carolina, and Georgia. The bays are found in the loose, unconsolidated sands that form a cover within the Atlantic Coastal Plain,



with the greatest concentration of bays in Bladen County. Their origin has long been a matter of speculation and debate. Carolina bays are shallow, oval depressions oriented in a southeast-northwest direction. Singletary Lake is a classic example of a water-filled Carolina bay. It has a shallow bottom with the deepest point southeast of the bay's center, and it has a raised sand rim, best developed at the southeast end. The shorelines vary from sand to peat. Peat deposits also surround the lakes and fill the non-lake remainder of the bays. The term "bay," in this case, refers to the distinctive vegetation — such as loblolly bay — that slowly fills these depressions. Only a few bays still contain water. Most have filled naturally with sediment and vegetation.

Singletary Lake State Park's small land base prohibits offering a diversity of recreational activities. The park serves to complement day recreational use at other nearby state lakes by offering organized groups overnight interpretation and education and extended-stay recreation in a peaceful, natural setting. It provides two group camps that offer opportunities for unique camping experiences and fellowship. Uses of the park include swimming, boating, hiking, sunning, fishing, and nature study. The primary interpretive theme focuses on the Carolina bay. Recreational activities are appropriately limited to preserve the quality of the recreational experience and to protect the park's outstanding natural resources.

Singletary Lake State Park offers outstanding scenic vistas of its lake and undeveloped shoreline. The broad expanses of tea-colored water, the barren sand lake rims, and the dense, vegetation-filled bay forest are in stark contrast to one another. In places, beautiful, large bald cypress trees hung with Spanish moss line the shore or grow in the shallow water. The trail offers a unique opportunity to walk through and view densely vegetated bog areas of a Carolina bay, the desert-like appearance of the sand rim, and lovely lakeside flora.

Singletary Lake State Park contains a significant example of Depression-era public works architecture. Camp Ipecac, built by the Civilian Conservation Corps in the 1930s, is an unusually intact and complete grouping of CCC buildings.

Singletary Lake State Park exists so its valuable biological, geological, recreational, scenic, and cultural values can be protected and because of the value of Singletary Lake as a public trust resource. The Division is charged with preserving these values and providing park experiences that promote pride in and understanding of North Carolina's natural heritage.

### III. SUMMARY OF INTERPRETIVE THEMES

The 1987 State Parks Act defines the purposes of the state parks system. It establishes that:

*The State of North Carolina offers unique archaeologic, geologic, biologic, scenic and recreational resources. These resources are part of the heritage of the people of this State. The heritage of a people should be preserved and managed by those people for their use and for the use of their visitors and descendants.*

It further provides that:

*Park lands are to be used by the people of this State and their visitors in order to promote understanding of and pride in the natural heritage of this State.*

The definition of environmental education as set forth in *The North Carolina Environmental Education Plan* is as follows:

*Environmental Education is an active process that increases awareness, knowledge and skills that result in understanding, commitment, informed decisions and constructive action to ensure stewardship of all interdependent parts of the earth's environment.*

Singletary Lake State Park has two primary interpretive themes and one secondary theme.

#### PRIMARY INTERPRETIVE THEMES

##### Carolina Bay Ecology

This interpretive theme focuses on the plant communities associated with the aquatic environment and the peat soils within the sand rim, and also on the plant communities associated with the mineral soils of the sand rim adjacent to the Carolina Bay. Key animal species, such as the red-cockaded woodpecker and the fox squirrel, are included. The role of fire in creating and maintaining habitat for the plants and animals of peat soil, mineral soil, and the ecotone or transition zone is also a part of the Carolina bay ecology.

##### Origin of Carolina Bays

This interpretive theme focuses on some of the many theories that attempt to explain the origin of Carolina bays. Emphasis is placed on the physical characteristics of Carolina bays, particularly their geomorphology (shape, orientation, depth, etc.) and their water quality (Ph, clarity, and temperature).

## **SECONDARY INTERPRETIVE THEMES**

### **Astronomy**

This secondary theme identifies the major constellations and their stars, with emphasis on associated Native American legends.



## **IV. PARK AND RECREATION DEMAND AND TRENDS**

### **ANNUAL VISITATION TRENDS**

Unlike most North Carolina state parks, Singletary Lake State Park's annual visitation has not grown over the years. Its visitation is also very low when compared to other state park units.

The primary reason for such low attendance is that Singletary Lake does not generally have any day-use visitation. The park is operated as a group camp, with day-use visitation — mainly fishing — occurring only when the group camps are not in use. Fishing is poor, so little demand for it exists. Group camp capacities — 88 for Camp Ipecac and 48 for Camp Loblolly Bay — limit the number of visitors to Singletary Lake.

The annual visitation has been irregular. During the 17-year period from 1977 through 1993, visitation varied from a low of 5,464 in 1979 to a high of 17,189 in 1986. Four years later, in 1990, visitation had dropped dramatically to 6,896 (Figure IV-1). In 1989, group camp rates increased. This increase may also have been a factor in decreasing visitation levels. Rates are currently \$95 a day and \$395 weekly.

Singletary Lake State Park operated through 1983 with only one group camp. In 1984, the second group camp operated for part of the year, and visitation climbed through 1986 before dropping off. In 1991, the park superintendent began promotional work to make groups aware of the facilities. Those efforts have apparently helped, as visitation has picked back up.

The method of taking attendance at Singletary Lake is different than that used at other state park units. At most parks, a traffic counter is used, with the number of vehicles multiplied by an average persons-per-vehicle number. At Singletary Lake, visitation is taken by multiplying the number of campers in each group by the number of days the group stays at Singletary lake. This method of counting is more accurate than the methods employed at other parks and also results in a lower visitation count. Use of the traffic counter allows a vehicle entering and exiting more than once a day to be counted each time.

### **MONTHLY VISITATION TRENDS**

As can be expected and like almost all state park units, Singletary Lake State Park has a highly seasonal visitation. Visitation begins rising with the advent of warmer weather in April, peaks in the summer, and begins declining in the fall as cooler weather arrives (Figure IV-2). During the summer months, group camps are generally rented for the entire week, whereas the rest of the year, weekend rentals are more common. Singletary Lake State Park receives approximately 85 percent of its annual visitation during the eight months from April through November.

Figure IV-1

# SINGLETARY LAKE ANNUAL VISITATION 1977-1994

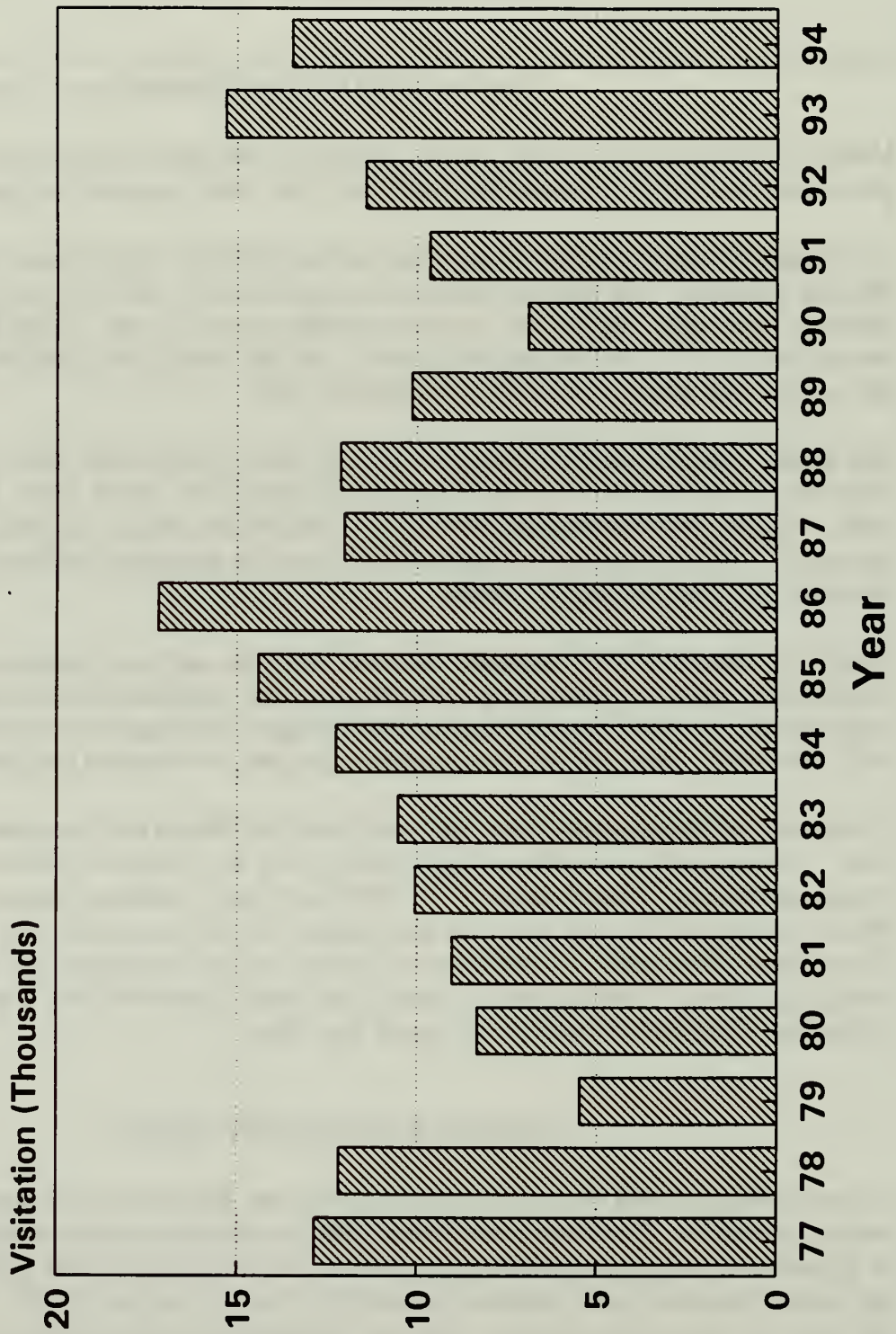


Figure IV-1. SILA Annual Visitation



# SINGLETARY LAKE MONTHLY VISITATION

## JANUARY 1991 - APRIL 1994

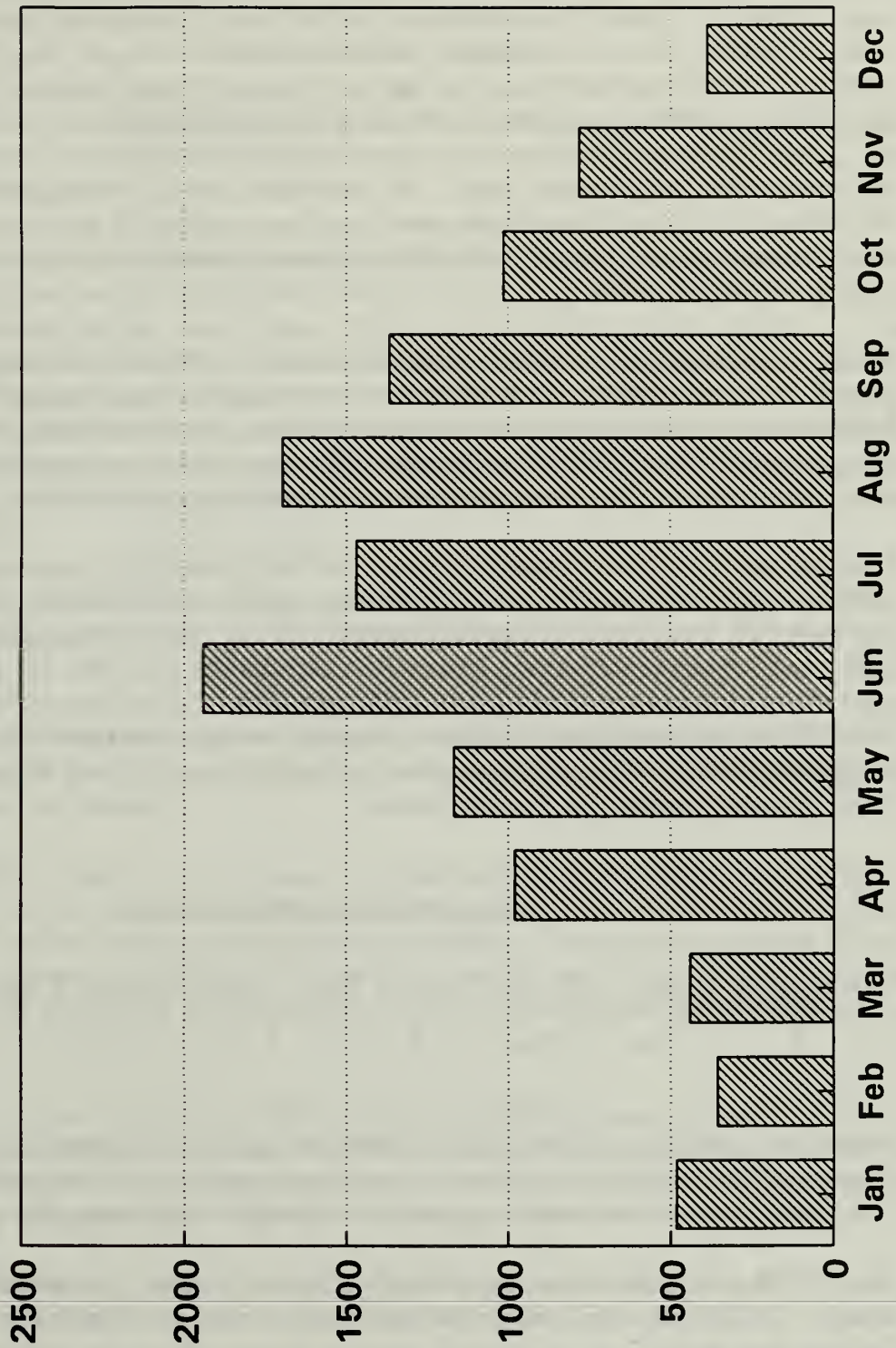


Figure IV-2. Average Monthly Visitation

## VISITOR INFORMATION

In 1987 the U.S.D.A. Forest Service was contracted by the Department to conduct a Public Areas Recreation Visitors Survey (PARVS) of the North Carolina state parks system visitors in order to identify their socio-economic characteristics and economic contribution to the state's economy. While Singletary Lake was not one of the eight parks involved in the survey, some information concerning state park visitors in general was learned.

Why do people visit state park units? The convenient location was cited by 31 percent of the respondents; 25 percent thought other areas were too crowded; 21 percent liked the good facilities; 8 percent wanted to try a new area; 7 percent enjoyed the scenic beauty; and 6 percent came to see the attraction.

Thirty-seven percent of park visitors come from within a 30-mile radius, while 17 percent come from 30 to 60 miles away. Park visitors surveyed indicated that the parks served as their sole destination 86 percent of the time. While most visitors come from nearby, the average one-way distance travelled was 139 miles. Seventy-eight percent of those surveyed indicated that they were return visitors. The average number of return trips per year was six.

Sixty-one percent of visitors statewide came with family members, 16 percent with friends, and 7 percent with family and friends. Ten percent of visitors came alone. Visitors also came in small numbers in organized groups and multiple families. The average group size surveyed was 3.59.

PARVS data indicates that 16.8 percent of groups surveyed used more than one car, and that the average number of persons per car was 3.05. The average age of the park visitor was 38.2 years. The age distribution was as follows:

### Percent of Visitors by Age Group

<u>Under 6</u>	<u>6-12</u>	<u>13-18</u>	<u>19-25</u>	<u>26-35</u>	<u>36-45</u>	<u>46-55</u>	<u>56-65</u>	<u>Over 65</u>
6.7	11.6	10.6	12.5	20.1	16.9	0.9	7.3	4.4

Because the PARVS information shown above was gathered at eight park sites, not including Singletary Lake State Park, it cannot be considered a valid study of Singletary Lake's visitation. It is useful, however, in providing a general assessment of the state park system's visitation.

The PARVS data indicate that approximately 25 percent of state park visitation comes from out of state. PARVS data also indicate that out-of-state visitors averaged 4.1 trips per year to North Carolina state parks.

Since over 18 percent of visitors are under the age of 13, demand exists for children's programs and facilities. Approximately 12 percent of visitors are 56 and older. This older segment of



the general population will be increasing, and as it does, demand for improved quality, accessibility, and safety should increase.

## POPULATION TRENDS

The primary service area of Singletary Lake State Park is identified as Bladen County, in which the park is located, and the surrounding counties of Columbus, Cumberland, Duplin, Pender, Robeson, and Sampson.

The total 1990 population of these counties was 574,142, 8.66 percent of the state's population. The region's population grew during the 1980s by 5.7 percent, less than half the 12.7 percent growth experienced by the entire state. Four of the region's seven counties — Bladen, Columbus, Duplin, and Sampson — actually lost population during the 1980s. Most of the region's growth took place in Cumberland and Pender counties (Figure IV-3). The region's overall population growth rate is expected to slow during the 1990s, a trend also predicted for the state as a whole as in-migration from other states slows. Growth and shifts in the population of the region, therefore, are not expected to affect the State Lakes to any significant degree during the 1990s.

According to the Office of State Budget and Management, outside of catastrophic events such as a depression or outbreak of a rapidly spreading, incapacitating disease, the most influential forces affecting the need for state services are the growth and shifts in population. Singletary Lake State Park's visitation is less affected than most parks by population growth because it generally does not function for day-use recreation. Additional eligible organizations would need to be established or the Division will need to increase marketing activities to existing groups in order for demand to increase.

Population shifts in various age segments will also take place. Over the past 10 years, the number of women in their prime childbearing years has declined with the aging of the 1940s baby boomers, and the result has been a decline in births. The number of women in their late teens to middle thirties is projected to change little over the next 20 years. Assuming a stable childbearing rate, the number of children in the newborn to four-year-old category will remain stable.

Public-school-age population (5 to 17) has declined significantly during the past 10 years. It has now reached a plateau that is expected to continue. The college age population (18 to 24) has declined in recent years and is likely to continue its small decline before stabilizing at the end of the century. The percentage of the 18-to-34 population started to decline in 1990.

In contrast, the growth in the middle-aged and elderly population during the next 20 years is a virtual certainty, thanks to the baby boom of the 1940s. The fastest-growing age segment over the next two decades will be the over-85 segment, followed by the 75-to-84 and then the 65-to-74 segments.

Figure IV-3

# POPULATION TRENDS 1980- 1990

## STATE LAKES AREA

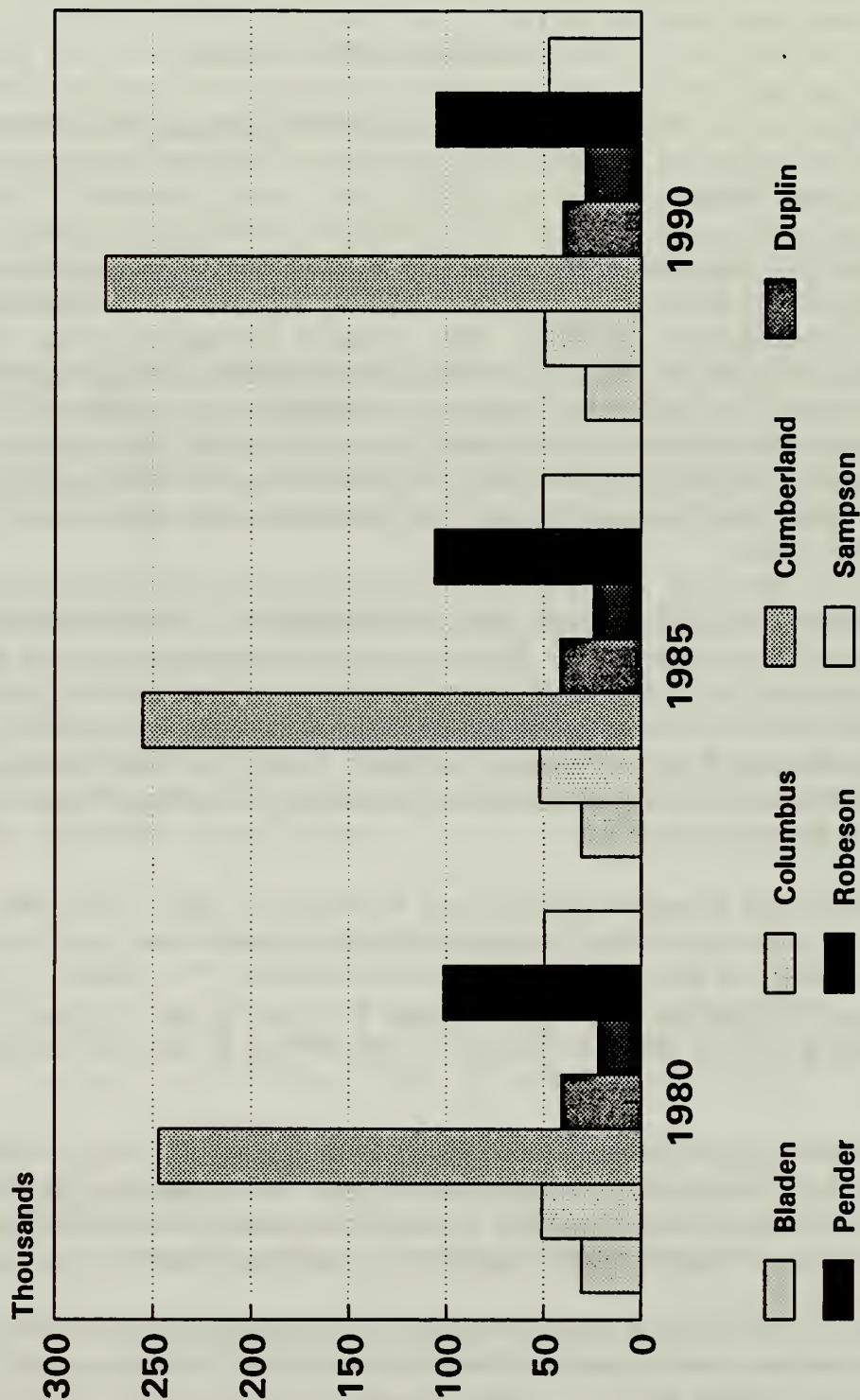


Figure IV- 3.STLA Area Population Trends

Over the past 10 years, the elderly population has become an increasingly vital political force. For the short-term future, it is anticipated that the growing elderly population will confine its demands primarily to health, nursing homes, activities of daily living, and protective services. Numerous surveys have shown these areas to be of primary concern to the elderly.

While shifts in population age groups are particularly significant in school and some social programs, these age-group changes that will be taking place will not have a significant effect on Singletary Lake State Park over the next five to 10 years.

### **POPULATION DENSITY**

The Singletary Lake State Park primary service area is, except for Cumberland County, a predominantly rural area. The region's population density (95 people per square mile) is well below that of the state as a whole (136). Bladen, Columbus, Duplin, Pender, and Sampson counties' population densities are all far below the state average (Figure IV-4).

### **OUTDOOR RECREATION PARTICIPATION IN NORTH CAROLINA**

The North Carolina Outdoor Recreation Participation Survey was mailed to 3,100 randomly selected residents in the spring of 1989. Forty-five percent, or 1,399 people, returned completed surveys. Each person receiving the survey was asked to estimate the number of times the members of his household had participated in each of 43 activities. The survey results provide good insight into the current participation of North Carolinians in a wide range of outdoor recreation activities.

The five most popular outdoor recreation activities in North Carolina are walking for pleasure, driving for pleasure, viewing scenery, beach activities, and visiting historical sites. Three out of every four households participated in walking for pleasure at least once in the past 12 months (Table IV-1). In addition to the five most popular activities, over fifty percent of the households that responded participated at least once in the following activities: swimming (in lakes, rivers, or oceans), visiting natural areas, picnicking, attending sports events, visiting zoos, and freshwater fishing.



# 1990 POPULATION DENSITY STATE LAKES AREA



Figure IV-4. STLA Area Population Density

Table IV-1. Outdoor recreation activities ranked by popularity.

Rank	Activity	Percentage of Households Participating
1.	Walking for Pleasure	75%
2.	Driving for Pleasure	72
3.	Viewing Scenery	71
4.	Beach Activities	69
5.	Visiting Historical Sites	62
6.	Swimming (in Lakes, Rivers, and Oceans)	54
7.	Visiting Natural Areas	53
8.	Picnicking	52
9.	Attending Sports Events	52
10.	Visiting Zoos	51
11.	Fishing - Freshwater	50
12.	Use of Open Areas	41
13.	Swimming (in Pools)	40
14.	Fishing - Saltwater	38
15.	Attending Outdoor Cultural Events	35
16.	Bicycling for Pleasure	32
17.	Other Winter Sports	31
18.	Camping, Tent or Vehicle	29
19.	Softball and Baseball	28
20.	Hunting	28
21.	Use of Play Equipment	28
22.	Power Boating	26
23.	Trail Hiking	26
24.	Jogging or Running	24
25.	Basketball	24
26.	Nature Study	22
27.	Golf	22
28.	Target Shooting	20
29.	Water Skiing	19
30.	Camping, Primitive	14
31.	Tennis	14
32.	Use Motorcycles, Dirt Bikes, ATV's	13
33.	Use Four Wheel Drive Vehicles	13
34.	Canoeing and Kayaking	13
35.	Horseback Riding	12
36.	Volleyball	12
37.	Downhill Skiing	12
38.	Football	11
39.	Soccer	7
40.	Sailboating	7
41.	Skateboarding	6
42.	Cross Country Skiing	2
43.	Windsurfing	1

## **PRIORITIES OF PUBLIC OUTDOOR RECREATION FUNDING**

The North Carolina Outdoor Recreation Survey asked residents a series of questions in order to identify and rank future demand for public outdoor recreation. Future demand was determined by asking them which activities they would have tried more often had adequate facilities been available. Respondents were then asked to rank these activities in order of importance. A scoring system was used assigning each activity a rating of high, moderate or low future demand based on the survey results.

In the second part of the analysis, the respondents' level of support for publicly funded outdoor recreation activities was determined by asking them to identify and rank those activities to which government should give highest priority when spending public money. The same scoring system used to analyze unmet demand was then applied to the survey results, with each activity receiving a high, moderate or low rating in public support for public funding.

In the final part of the needs analysis, the two ratings for each activity were combined to produce a score of one to nine that reflected both future demand and public funding priorities. The activities that ranked high in both future demand and support for public funding received the highest priority in the needs assessment. Support for public funding was given higher priority than expressed demand (Table IV-2). Based on this analysis, many of the activities rated as high and moderate priorities are activities that are currently or could potentially be provided at Singletary Lake State Park. Some activities rated as public priorities are either illegal in state parks (hunting and target shooting) or not applicable to Singletary Lake (visiting zoos and saltwater fishing).

**Table IV-2. Public Priorities for Future Outdoor Recreation Activities**

<u>Activity</u>	<u>Code</u>	<u>Future Demand</u>	<u>Support for Public Funding</u>
Walking for Pleasure	1	High	High
Camping, Tent or Vehicle	1	High	High
Picnicking	1	High	High
Beach Activities	1	High	High
Fishing - Freshwater	1	High	High
Attend Outdoor Cultural Events	1	High	High
Visiting Natural Areas	2	Moderate	High
Use of Play Equipment	2	Moderate	High
Visiting Zoos	2	Moderate	High
Visiting Historical Sites	2	Moderate	High
Bicycling for Pleasure	3	High	Moderate
Swimming (in Pools)	3	High	Moderate
Viewing Scenery	4	Moderate	Moderate
Hunting	4	Moderate	Moderate
Trail Hiking	4	Moderate	Moderate
Use of Open Areas	4	Moderate	Moderate
Target Shooting	4	Moderate	Moderate
Swimming (Lakes, Rivers, Ocean)	4	Moderate	Moderate
Fishing - Saltwater	4	Moderate	Moderate



## **AREA OUTDOOR RECREATIONAL OPPORTUNITIES**

An analysis of area outdoor recreational opportunities has less relevance than usual because Singletary Lake State Park is operated as a group camp facility, not as a regular state park with day-use and family camping. Singletary Lake offers the setting for a unique camping and fellowship experience, one not found at other public facilities in the area. Singletary Lake is used as a group camp partly because there are other nearby state lakes and state parks that offer other types of outdoor recreation. It is important to understand how Singletary Lake fits into the area's outdoor recreational opportunities.

There are six state park units within a 50-mile radius of Singletary Lake. Five of these park units — Bay Tree Lake State Park, Bushy Lake State Natural Area, Jones Lake State Park, Lake Waccamaw State Park, and White Lake — also contain Carolina bays. The Lumber River State Park is the other nearby state park. A brief description of these state park units follows.

### **Bay Tree Lake State Park, Bladen County**

Bay Tree Lake State Park is currently undeveloped. Bay Tree Lake is a 1,418-acre Carolina bay that offers beautiful scenic vistas of its open water and extensive undeveloped shoreline. A portion of the shoreline and the lake have been adversely affected by private development, lessening its natural values. The state owns the lake and 609 acres of land on the southwest side of the lake. Plans for development include picnicking, camping, dock and boat launch, and support facilities.

### **Bushy Lake State Natural Area, Cumberland County**

Bushy Lake is an excellent example of a "low bay," with its interior having the appearance of an open savannah with scattered trees, shrubs, and a variety of grasses. Although not a lake, it does contain shallow water much of the year, as well as several small ponds. Limited access is provided for low-intensity recreational use such as nature observation, hiking, and environmental education and research.

### **Jones Lake State Park, Bladen County**

Jones Lake State Park contains two Carolina bays, the 224-acre Jones Lake and the 315-acre Salters Lake. Its outstanding biological resources include high quality aquatic and shoreline communities typical of bay lakes. The state owns the entire shoreline of both lakes. Swimming, hiking, picnicking, camping, fishing, boating, and nature study are offered.

### **Lake Waccamaw State Park, Columbus County**

Lake Waccamaw is the second largest Carolina bay lake in North Carolina, containing 8,938 acres. It is a unique habitat that is home to several species of fish, clams, and snails found

nowhere else in the world. The 1,732-acre land base includes longleaf pine ridges, wet pocosins, pine savannas, and swamp forests. Park facilities are limited, but include a picnic area and swimming pier.

### **Lumber River State Park — Scotland, Hoke, Robeson, and Columbus Counties**

Lumber River State Park, created in 1989, is in an early state of development. The state park and state river stretch 110 miles from state road 1412 in Scotland County to the North Carolina-South Carolina state line. The slow-moving blackwater river offers opportunities for canoeing, boating, and fishing. Facilities are currently being developed on land located south of US 74 in Robeson County. The master plan calls for picnicking areas, family camping, trails, river access areas, and support facilities.

### **White Lake, Bladen County**

White Lake State Lake is a 1,068-acre Carolina Bay. The state owns only a .6-acre access on the southern shoreline. This lot provides staff access to the lake and a place to dock the Division's patrol boat. No public access areas at the lake are operated by the Division. Almost the entire shoreline is privately developed, and the lake is heavily used for recreational boating. White Lake is a regional tourist attraction and has many motels, restaurants, amusements, condominiums, and second homes along its shoreline.

**Table IV-3. Road Mileage Between State Lakes**

	Bay Tree Lake	Bushy Lake	Jones Lake	Salters Lake	Singletary Lake	Lake Waccamaw	White Lake
Bay Tree Lake	X	30.7	12.2	14.7	12.2	51	5.5
Bushy Lake	30.7	X	18.5	16	32	60.4	25.2
Jones Lake	12.2	18.5	X	2.5	13.4	42	6.7
Salters Lake	14.7	16	2.5	X	16	44.4	9.2
Singletary Lake	12.2	32	13.4	16	X	52	6.7
Lake Waccamaw	51	60.4	42	44.4	52	X	45.4
White Lake	5.5	25.2	6.7	9.2	6.7	45.4	X

In addition to state park system units, there are other public areas used for outdoor recreation located in the Singletary Lake area.

### **Bladen Lakes State Forest, Bladen County**

The state-owned Bladen Lakes State Forest covers over 31,000 acres, including land around Jones, Singletary, and Salters lakes. In addition to building up the growing stock of timber on previously over-cut and burned out areas, the forest also serves to provide recreation including group camping and hunting. The forest is an officially designated state game land, called the Bladen Lakes Game Land. The forest is also used for educational purposes, particularly the demonstration of forestry management practices.

### **North Carolina Game Lands**

In addition to the Bladen Lakes Game Land mentioned above, two other large game lands lie within 50 miles of Singletary Lake State Park. They are the 13,295-acre Green Swamp Game Land, located in Brunswick County approximately three miles north of Supply, and the 1,585-acre Sutton Lake Game Land, in New Hanover County. The Green Swamp Game Land is leased from the Nature Conservancy and the Sutton Lake Game Land from Carolina Power & Light Company.



## **V. SUMMARY OF LAWS GUIDING PARK MANAGEMENT**

There are many federal and state statutes, state and federal executive orders, and administrative rules and policies that govern the operation of the state parks system. This chapter includes a brief discussion of the primary legal basis for the existence and operation of the state parks system and Singletary Lake State Park. The definitions of and Departmental duties concerning state-owned lakes are found primarily in Chapters 113 and 146 of the North Carolina General Statutes. Those chapters deal with natural resource conservation and development, and state real property, respectively.

### **STATE LEGAL MANDATES**

#### **North Carolina Constitution**

Article XIV, Section 5 of the North Carolina Constitution sets overall policy by broadly defining the conservation and protection of natural resources and the acquisition of such resources as a proper function of government. The amendment reads in part as follows:

*It shall be the policy of this State to conserve and protect its lands and waters for the benefit of all its citizenry, and to this end it shall be a proper function of the State of North Carolina and its political subdivision to acquire and preserve park, recreation, and scenic areas, to control and limit the pollution of our air and water, to control excessive noise, and in every other appropriate way to preserve as a part of the common heritage of this state its forests, wetlands, estuaries, beaches, historical sites, open land, and places of beauty.*

#### **State Parks Act**

The State Parks Act (G.S. 113-44.7 through 113-44.14) sets forth a mission statement for the state parks system. It states that the system functions to preserve and manage representative examples of significant biological, geological, scenic, archaeological, and recreational resources, and that park lands are to be used by the people of the state and their visitors and descendants in order to promote understanding of and pride in the state's natural heritage.

The State Parks Act also calls for development and periodic revisions of a System Plan to achieve the mission and purpose of the state parks system in a reasonable, timely, and cost-efficient manner. The Act describes System Plan components and requires that public participation be a component of plan development and revisions.

The State Parks Act also calls for the classification of park resources and development of general management plans (GMPs) for each park. GMPs are to include a statement of park purpose, an analysis of major resources and facilities, and a statement of management direction.

## **Powers and Duties of the Department of Environment, Health, and Natural Resources**

The Department is authorized to make investigations of the resources of the state and to take such measures as it may deem best suited to promote the conservation and development of such resources. In addition, the Department may care for state forests and parks and other recreational areas now owned, or to be acquired by, the state. (G.S. 113-8)

### **State Nature and Historic Preserve Dedication Act**

The State Nature and Historic Preserve Dedication Act (G.S. 143-260.6) was authorized by Article 14, Section 5 of the North Carolina Constitution. It seeks to ensure that lands and waters acquired and preserved for park, recreational and scenic areas for the purpose of controlling and limiting the pollution of air and water, controlling excessive noise, and in every other appropriate way preserving as a part of the common heritage of the state, continue to be used for those purposes. The State Nature and Historic Preserve Act provides a strong legal tool for protecting lands from incompatible uses. The addition and removal of lands to and from the State Nature and Historic Preserve require a vote of three-fifths of the members of each house of the General Assembly.

All property within the boundaries of Singletary Lake State Park was dedicated as a State Nature and Historic Preserve on April 4, 1989.

### **North Carolina Environmental Policy Act of 1971**

Recognizing the profound influence that man's activity has on the natural environment, the General Assembly passed the Environmental Policy Act "*to assure that an environment of high quality will be maintained for the health and well-being of all...*"

The Act declares that:

*It shall be the continuing policy of the State of North Carolina to conserve and protect its natural resources and to create and maintain conditions under which man and nature can exist in productive harmony. Further, it shall be the policy of the State to seek, for all its citizens safe, healthful, productive, and aesthetically pleasing surroundings; to attain the widest possible range of beneficial uses of the environment without degradation, risk to health or safety; and to preserve the important historic and cultural elements of our common inheritance. (G.S. 113A-3)*

While there are other General Statutes that concern the state parks system and the environment, the above-described statutes, along with Article XIV, Section 5, of the North Carolina Constitution, largely define the purposes of the state parks system and serve to guide the operation of state park system units.

## **State Lakes Legislation**

In 1911 the North Carolina General Assembly passed legislation declaring that certain lakes containing 500 acres or more, including 572-acre Singletary Lake, were not to be sold or conveyed, but should:

*... always be and remain the property of the State of North Carolina for the use and benefit of all the people of the State. (1911, c.8)*

That legislation and similar legislation passed in 1929 that lowered the acreage for state lakes to 50 acres clearly indicated the public trust nature of state lakes. Managing state lakes as a public trust resource includes the prevention of unlawful private encroachment on attendant public rights.

## **Erection of Structures**

A permit is required in order to erect any dock, pier, pavilion, boathouse, bathhouse, or other structure upon the floor of, or in or upon, the waters of any state lake (G.S.146-13). The Department of Administration has delegated the Division of Parks and Recreation as the permitting agency.

## **Recreational Use of State Lakes**

All recreation, except hunting and fishing, in, upon, or above any state lake may be regulated in the public interest by the Division of Parks and Recreation (G.S. 146-18).

## **Control Over Parks**

General Statute 113-36 authorizes the Department to make reasonable rules for the regulation of the use by the public of state parks and state lakes. It authorizes the Department to construct and operate within state parks and state lakes and any other areas under its charge suitable public service facilities and conveniences and charge and collect reasonable fees for their use. It also authorizes the granting of concessions to private individuals or companies.

## **Dredging and Filling**

The Department has jurisdiction over any excavation or filling project begun in any state-owned lakes (G.S.113-229). The dredge-and-fill statute provides detailed conditions and procedures necessary to process and issue a permit. It also addresses permit compliance. Questions regarding dredging and filling should be directed to the Division of Coastal Management in Wilmington, North Carolina (919-395-3900).



## **FEDERAL LAWS**

### **Land and Water Conservation Fund Act of 1965**

The federal Land and Water Conservation Fund Act (PL 88-578) offers protection and places restrictions on fund-assisted outdoor recreation areas.

By virtue of receiving LWCF grant assistance, most of the state parks system, including all of Singletary Lake State Park at the time of completion of the LWCF grant in October 1986 is subject to LWCF rules and regulations. Property acquired or developed in whole or in part with LWCF assistance cannot be converted to other than public outdoor recreation use without federal approval. A conversion may only take place if approved by the Secretary of the Interior, and only then if replacement property of equal fair market value and reasonably equivalent usefulness and location is made available.

LWCF requirements include: programming, operating, and maintaining areas in a manner that encourages public participation; maintaining the property so it appears attractive and inviting to the public; maintaining property, facilities and equipment to provide for public safety; keeping facilities, roads, trails and other improvements in reasonable repair throughout their lifetime to prevent undue deterioration and encourage public use; keeping the park and facilities open for use at reasonable hours and times; and making future development meet LWCF rules and regulations. LWCF-assisted sites are periodically inspected by state and federal inspectors to ensure compliance with LWCF requirements.

### **Clean Water Act**

Singletary Lake State Park has extensive wetland areas. In addition to being protected by the state's dredge-and-fill statutes, these sensitive areas also receive some protection from Section 404 of the federal Clean Water Act. The waters of Singletary Lake, including its wetlands, are waters of the United States within the meaning of the Clean Water Act, and, thus, any dredging or filling in the waters of Singletary Lake may require permitting by the U.S. Army Corps of Engineers. Activities in wetlands for which permits may be required include, but are not limited to: placement of fill material; ditching activities; land clearing involving relocation of soil material; land leveling; most road construction; and dam construction (33 USC 1344). The Division will avoid undertaking construction located in wetlands unless there is no practical alternative and all practical measures are taken to minimize harm to the wetland.

## **STATE LAKES MASTER PLAN**

A State Lakes Master Plan, which included Singletary Lake State Park, was completed in 1977. The plan serves as a guide for development and management of park resources. It includes an analysis of cultural and natural resources as well as site analysis and development recommendations.



The master plan still serves to guide overall park development. During the general management plan process, the existing master plan was reviewed to determine if master plan proposals are still valid or if modifications are needed. GMP evaluation determined that changes to the master plan are needed. These changes are detailed in Chapter VII.

### **SINGLETERY LAKE STATE PARK DEED RESTRICTIONS**

In October 1954 the federal government deeded the land around Singletary Lake to the state of North Carolina. The land was conveyed subject to the restriction that it be used for "public purposes."



## VI. NATURAL AND CULTURAL RESOURCE MANAGEMENT

### NATURAL RESOURCE MANAGEMENT POLICY

The Division of Parks and Recreation's approach to natural resource management is directed by the North Carolina Constitution and the State Parks Act, both of which require the prudent management of natural resources. The constitution sets the overall policy by broadly defining the conservation and protection of natural resources and the acquisition of such resources as a proper function of government. The State Parks Act states that unique archaeological, geological, biological, scenic and recreational resources are a part of the heritage of the people that *"...should be preserved and managed by those people for their use and for the use of their visitors and descendants."*

The North Carolina state parks system plays an important role in maintaining, rehabilitating and perpetuating the state's natural heritage. The natural resources of the state parks system are: high quality, rare or representative examples of natural communities; native plants and animals; geological features and landforms; water resources; and the natural processes that affect these resources. The primary objective in natural resource management will be the protection of natural resources for their inherent integrity and for appropriate types of enjoyment while ensuring their availability for future generations.

It is the Division's policy that natural resources will be managed by allowing natural environments to evolve through natural processes with minimal human influence. Natural resource management will not attempt solely to preserve individual species or processes; rather, it will attempt to maintain all the components and processes of a park's naturally evolving ecosystems. When intervention is necessary, direct or secondary effects on park resources will be minimized to the greatest extent possible. Intervention of natural processes may occur:

- 1) to correct or compensate for the previous human disruption of natural processes;
- 2) to protect, restore or enhance rare species;
- 3) to protect, restore or enhance significant archaeological resources;
- 4) to construct, maintain, improve or protect park facilities; and,
- 5) to prevent danger to human health or safety.

All park facilities will be designed, constructed and maintained to avoid adverse impacts to high quality natural communities, rare plant and animal species, major archaeological sites and other natural and cultural resources.

## NATURAL COMMUNITIES

A natural community is defined as "*a distinct and reoccurring assemblage of populations of plants, animals, bacteria, and fungi naturally associated with each other and their physical environment.*" The descriptions of the communities found at Singletary Lake State Park follow the *Classification of the Natural Communities of North Carolina: Third Approximation* (Schafale and Weakley, 1990).

### Coastal Plain Small Stream Swamp Blackwater Subtype

This community type occurs on the floodplains of small blackwater streams. These streams tend to be acidic, low in nutrients and mineral sediments, and colored by tannins. Since the gradients are usually quite low, flooding is generally seasonal and short-lived and does not usually disturb vegetation directly.

The canopy in this community type is usually dominated by a combination of bald cypress (*Taxodium distichum*) and swamp tupelo (*Nyssa biflora*). Sweetgum (*Liquidambar styraciflua*), yellow poplar (*Liriodendron tulipifera*), and various oak species (*Quercus spp.*) are also common. The shrub layer is quite variable, ranging from sparse to almost pocosin-like. Vines, particularly poison ivy (*Toxicodendron radicans*), greenbrier (*Smilax spp.*), and muscadine (*Vitis rotundifolia*) are usually prominent.

This community type occurs at Singletary Lake State Park in a small Carolina Bay located immediately southeast of Singletary Lake. It is a mature second-growth example with some trees exceeding 24" in diameter. The canopy is dominated by black gum (*N. sylvatica*), water oak (*Q. nigra*), and sweetgum. The understory is dominated by red maple (*Acer rubrum*) and American holly (*Ilex opaca*).

### Pond Pine Woodland

This community type is frequently found on peat deposits in and around Carolina Bays and shallow swales. The canopy is dominated by pond pine (*Pinus serotina*). Co-dominants sometimes occur and may include sweetbay (*Magnolia virginiana*), loblolly pine (*P. taeda*), and red maple. The understory and shrub layers can become extremely dense and may reach up to 15 feet in height. Common understory species include ti-ti (*Cyrilla racemiflora*), fetterbush (*Lyonia lucida*), and cane (*Arundinaria gigantea*).

Although this community type is nutrient poor and frequently wet, like other peatland communities, it is susceptible to fire during dry periods. These communities generally develop extensive fuel loads, and fires may be intense enough to kill both the subcanopy and canopy trees. Many shrub and herb species resprout readily following fire, however, and only a few years are needed for the shrub layer to become reestablished. Pond pine will also resprout following low- to medium-intensity fires; in the event of a severe fire in which the canopy-



dominant trees are killed, pond pine can recolonize the site by virtue of serotinous cones, which release their seeds only in response to a severe fire.

This community type occurs at Singletary Lake Park in peat deposits along the eastern shore of Singletary Lake. This site is located within the park's Turkey Oak Registered Natural Heritage Areas and is approximately 20 acres in size. The understory is extremely dense and Natural Heritage Program staff have noted that the interior of the site may support a High Pocosin community. Pond pine is joined by Atlantic white cedar (*Chamecyparis thyoides*) as a dominant canopy species. The area grades into a Xeric Sandhill Scrub community as it approaches the sand rim. Several populations of Venus flytrap (*Dionaea muscipula*) occur at this margin between the Pond Pine community and the sand rim. Burn units have been established in this community, and periodic prescribed burning should aid in its restoration and maintenance.

### **Xeric Sandhill Scrub**

This community type occurs on the coarse, deep sands of ridge and swale systems; it is frequently found along the exposed and very dry rims of Carolina Bays. It is the driest community type that occurs on the coastal plain, and the canopy is typically open and dominated by sparse stands of longleaf pine (*P. palustris*). The subcanopy is usually sparse and is frequently dominated by turkey oak (*Q. laevis*). The shrub layer is also sparse and is frequently dominated by dwarf huckleberry (*Gaylussacia dumosa*).

Although these communities usually produce too little fuel to sustain frequent high-intensity fires, low-intensity fires are known to have been common historically throughout the coastal plain, and these fires helped to define these communities. Frequent fires kept the canopy sparse and open and prevented turkey oaks from invading and becoming overly large and dense. Fire has been excluded from this area for several decades, and turkey oaks are now very prevalent.

This community type is believed to have been widespread in the coastal plain, but most sites have been lost or altered due to fire suppression or logging. Because longleaf pine is slow to recolonize disturbed sites, large high-quality examples of this community type are now rare.

There are two examples of this community type at Singletary Lake State Park. The first occurs in the Turkey Oak Registered Natural Heritage Area and is adjacent to the Pond Pine Woodland community along the northeast shore of Singletary Lake. The central portion of this site is extremely dry and barren. The canopy along the margins is dominated by large, scattered longleaf pines. Turkey oak is well established throughout the area and dominates the subcanopy. Wiregrass (*Aristida stricta*) is also present in the shrub/herb layer, indicating that repeated low-intensity fires have burned here in the past.

The second example occurs along the park's eastern boundary behind the group camps. This is a sandy upland area, and the longleaf pine canopy ranges from sparse to nearly closed. Turkey oak dominates the subcanopy; wiregrass and dwarf huckleberry are present throughout, but both species are scattered. Fire has been excluded from this site for many years, and many of the canopy trees exceed 12 inches in diameter. All the old trees bear turpentine scars. This site is wetter than normal for this community type, and it grades into a Pine Flatwoods

community type along its margins. Burn units have been established in this community, and periodic prescribed burning should aid in its restoration and maintenance.

### **Pine Flatwoods**

This community type generally occurs on flat or nearly flat areas that may become seasonally wet or dry. The canopy is generally dominated by longleaf pine or loblolly pine, and it frequently grades into Pond Pine Woodland or Xeric Sandhill Scrub along its margins. The understory is usually sparse, but is frequently dominated by turkey oaks. The shrub layer varies in density, and common species include inkberry (*Ilex glabra*), blue huckleberry (*G. frondosa*), swamp red bay (*Persea palustris*), and sweetbay. This is another fire-maintained community that relies on frequent, low-intensity fires to maintain its open canopy and sparse subcanopy.

This community occurs on the eastern side of Singletary Lake State Park, behind the group camp facilities. The canopy is generally open and is dominated by loblolly and longleaf pines. Because fire has been excluded for so long in this area, turkey oaks have invaded the community and are now well established in the subcanopy. The shrub layer is patchy, and there are several sections where pocosin-like vegetation has developed in low, wet areas. Burn units have been established in this community, and periodic prescribed burning should aid in its restoration and maintenance.

## **NATURAL HERITAGE PROGRAM ELEMENT OCCURRENCES**

### **Rafinesque's Big-Eared Bat (*Plecotus rafinesquii*)**

This species has been assigned Special Concern status by the North Carolina Wildlife Resources Commission, meaning that it has legal protection status. But even though it is rare enough to warrant such protection, any animal species with this status can still be collected in the wild and sold under regulations outlined in Article 25, Chapter 113 of the North Carolina General Statutes. This bat roosts in old buildings, caves, and mines, usually near water. The only park record dates from July 1975, when a seasonal naturalist captured and released two individuals on separate days. The Natural Heritage Program's files do not contain any information on the location of these captures.

### **Venus Flytrap (*Dionaea muscipula*)**

This species has been assigned Special Concern status by the North Carolina Department of Agriculture's Plant Conservation Program, meaning that it has legal protection status. Even though it is rare enough to warrant such protection, any plant species with this status can still be collected in the wild and sold under regulations outlined in the provisions of the Plant Protection and Conservation Act (G.S. 19B 106:202.12). Because of concerns over this species' rarity, however, the Plant Protection Program has also designated the species as a Candidate for listing as Threatened or Endangered. Candidate species are rare species with the preponderance of their populations in North Carolina and whose fate depends largely on their conservation here.



This species occurs on the north side of Singletary Lake in the Turkey Oak Registered Natural Heritage Area. It grows on the margin between a Pond Pine Woodland community and a Xeric Sandhill Scrub community at the edge of the lake's sand rim. The size and condition of the population was inventoried in August 1991; since then, field and resource management staff have visited the site frequently.

The Venus flytrap requires frequent fire for habitat maintenance, and this area is included in the park's fire management plan. This area was last burned in 1976, however, and the flytrap populations are suffering from heavy shrub encroachment. Park staff have maintained the flytrap habitat by clipping away the shrubs, but it is still heavily shaded and crowded by adjacent vegetation. Periodic prescribed burning would aid greatly in restoring and maintaining this species' habitat.

### **White Wicky (*Kalmia cuneata*)**

This small shrub has been assigned Endangered status by the Plant Protection Program, meaning that its continued existence is considered to be in jeopardy; it is, therefore, a legally protected species. It has also been assigned Special Concern status, meaning that, like the Venus flytrap, it can be sold commercially. Because it has been listed as an Endangered species, however, all commercial sales must come from propagated material and not from specimens collected in the wild. The only park record of this species dates from August 1955, when it was located in pocosin vegetation in the Turkey Oak Registered Natural Heritage Area.

### **Southern Bogbutton (*Lachnocaulon beyrichianum*)**

This small herb occurs in pocosin vegetation in the sandhills. It has been identified by the Plant Conservation Program as a Candidate species for listing as Threatened or Endangered. The only park record of this species dates from July 1950, when it was found in a turkey oak stand on the south shore of Singletary Lake.

### **Red-cockaded Woodpecker (*Picoides borealis*)**

This species has been designated by the U.S. Fish and Wildlife Service and by the N.C. Wildlife Resources Commission as an Endangered species, meaning that it is in danger of extinction throughout all or a significant portion of its range. The bird lives in mature, open pine forests, particularly those dominated by longleaf pine. There is an active colony site located in a stand of mature longleaf pines just east of Camp Loblolly Bay. Several inactive nest sites are scattered throughout the pine flatwoods to the east of Camp Ipecac and Camp Loblolly Bay. A new nest cavity start near the southeastern shore of Lake Singletary was reported in May 1994.

### **Edisto Crayfish (*Procambarus ancylus*)**

This species is known to occur in ditches, streams, and lakes in southeastern North Carolina. This crustacean has been designated as a Watch Category 2 species, meaning that although it is rare or uncommon in North Carolina, its distribution and population size are fairly well known and are not believed to be in danger of decreasing. Therefore, it is not considered rare enough to warrant protection through a higher designation status. The only park records of this species date from April 1950. The records are vague about its location, noting only that it was found in Singletary Lake.

## **REGISTERED NATURAL HERITAGE AREA**

### **Turkey Oak Registered Natural Heritage Area**

This area encompasses 155 acres along the northeastern shore and sand rim of Singletary Lake (Figure VI-1). It includes a Pond Pine Woodland community as well as a Xeric Sandhill Scrub community. Rare species known to be present include Venus flytrap, white wicky, and southern bogbutton. Much of the area supports fire-dependent communities, but fire has been excluded from the region for several decades, and, as a result, the dominant vegetation has been altered. The size and density of turkey oaks have increased markedly, and the shrub layer is heavier than it would be if the area were burned regularly. The area is included in the park's fire management plan, and the use of periodic prescribed burning will be essential in its restoration and maintenance.

## **CULTURAL AND NATURAL RESOURCE MANAGEMENT ISSUES**

### **Cultural Resources Management**

The group camping facilities at Camp Ipecac were constructed from 1936 to 1939 by local citizens employed by the Resettlement Administration; they are a good example of Depression Era public works projects. Camp Ipecac is still used extensively by non-profit groups from April 1 through October 31. All the buildings at the camp should be carefully monitored and maintained to preserve their historical value. These structures may be candidates for listing on the National Register of Historic Places, and all renovation plans will need to be reviewed by the State Historic Preservation Office.

### **Natural Resource Inventories**

A comprehensive, updated natural heritage survey is needed for the park. The survey should include systematic inventories of all plant and animal species. These inventories would provide the baseline data needed for a natural resources monitoring program and could also provide for expanded I&E programming. An emphasis should be placed on determining the location and status of the park's rare species.

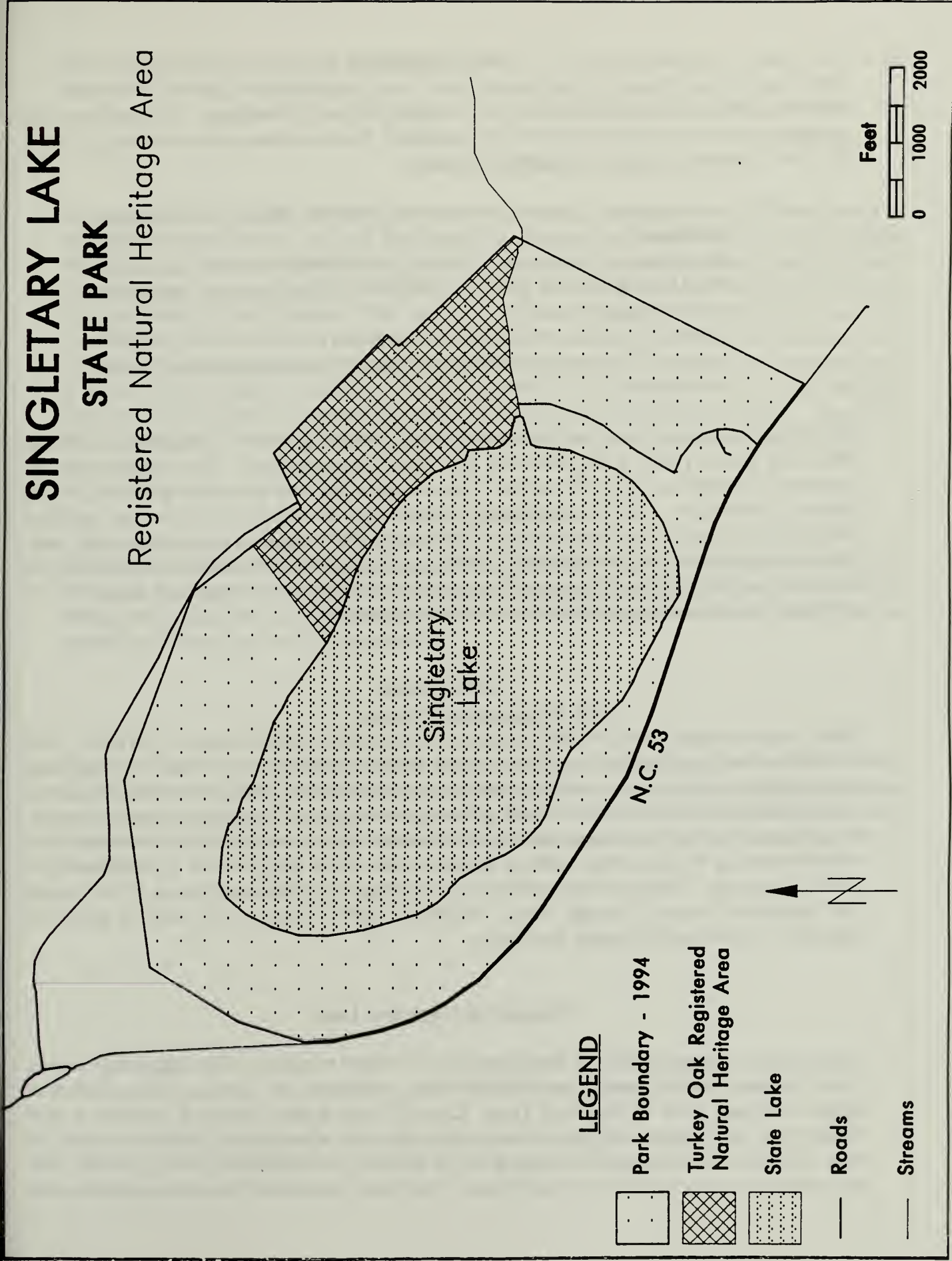


Figure VI-1.

# SINGLETARY LAKE

## STATE PARK

Registered Natural Heritage Area



## **Fire Management**

Fire has played an important historical role in shaping the park's landscape. The park has a fire management plan that calls for the use of prescribed fire in six burn units covering 67 acres. The plan's primary ecological objectives are:

- 1) to reintroduce fire and reduce fuel loads in the park's fire-adapted ecosystems;
- 2) to restore and maintain the park's fire-adapted communities, including Pond Pine Woodland, Xeric Sandhill Scrub, Pine Flatwoods, and areas of pocosin vegetation; and
- 3) to enhance habitat for the park's rare species that rely on fire-maintained habitat. These species include the Venus flytrap and the Red-cockaded woodpecker.

The park's fire management plan was updated and expanded in 1994 to include four additional burn units in the park's Pine Flatwoods and Pocosin communities. One pocosin unit was successfully burned in May 1994 as part of an ecological burning workshop sponsored by The Nature Conservancy. The prolonged suppression of fire throughout the region has produced abnormally high fuel loads and threatens to significantly alter vegetation patterns across the park. The reintroduction of fire into the park's natural communities in 1994 was very successful, and continued implementation of the plan will reduce heavy fuel loads and ensure that the park's fire-dependent species and ecosystems are properly maintained.

## **Buffer Needs**

Game lands managed by the Wildlife Resources Commission surround much of the park. Field staff have concerns about potential safety issues regarding the nearness of these hunting areas to the park's high-use areas, including the group camps and the trails around the Registered Natural Heritage Area. Also, hunting dogs have been reported running loose on park property. In addition, field staff have reported damage along the lake's sand rim from four-wheel drive vehicles entering the park from roads on adjacent lands owned and managed by the Division of Forest Resources. Field staff are particularly concerned with vehicular impacts in the Turkey Oak Registered Natural Heritage Area. Additional land for buffer areas may be needed to adequately protect park property and visitors.

## **Boating on Singletary Lake**

All motorized boating activity on Singletary Lake is limited to motors of 10 horsepower or less. Local residents have expressed some interest in the construction of a dock as well as the use of larger motorized boats on Singletary Lake. Like all Carolina Bays, however, this lake is very shallow; the use of large horsepower boats could negatively affect aquatic species and would be very disruptive. The recreational boating use of this lake has traditionally been by small, non-motorized, or low-powered craft, and the use of loud, large motorized boats is incompatible with

the quiet experience that park visitors now have. The current limit on motor size to 10 horsepower should be maintained, and a larger launch facility should not be constructed.

### **Mineral Rights**

As a condition of the deed conveying the land at Singletary Lake from the U.S. Government to the state of North Carolina in 1954, the federal government retained an undivided three-fourths interest in all mineral deposits. Besides retaining the rights to common minerals categories such as sand, gravel, stone, and clay, the deed specifically retains rights to all fissionable materials, including uranium and thorium. This provision arose as a function of the Cold War and was directed at all mineral deposits that were deemed relevant to Section 5 of the Atomic Energy Act of 1946. The Division has no information that fissionable materials occur on park property, and it seems highly unlikely that the federal government would exercise its rights for common mineral categories that are more readily available at established quarries and mines. Therefore, it does not appear necessary for the Division to amend the provision at this time.

### **Trail Compaction**

Soil compaction has occurred on the nature trail near the shoreline. This section of the trail is a wetland area, and park staff should work with the regional trails specialist and the Resource Management Program to address the situation. Further damage to these wet areas could be minimized through the use of boardwalks.

### **Resource Management Plan**

A comprehensive, park-specific resource management plan addressing these and future issues needs to be developed. This plan should include detailed actions, the implementation of which will prevent or correct threats or damage to the park's natural resources. The addition of a district resource management specialist would facilitate the development and implementation of this plan.





## **VII. PHYSICAL PLANT INVENTORY**

### **FACILITY INVENTORY AND INSPECTION PROGRAM**

The buildings in state parks are needed for park operations and visitor services. These buildings and facilities are essential components of protecting the public's health and safety. They include facilities providing safe drinking water, restrooms, and electricity, as well as recreation facilities such as bathhouses, group camps, and cabins. Without proper maintenance, these facilities are, at best, a disservice to the citizens who use them, and at worst, potentially harmful.

The Facility Inventory and Inspection Program (FIIP) is a computer-based system used to track the condition, maintenance needs, and repair costs of every building in the state parks system. A principal objective of FIIP is to identify deficiencies that may affect health, fire, or life safety. Other objectives are to identify accessibility deficiencies and other significant maintenance-related deficiencies.

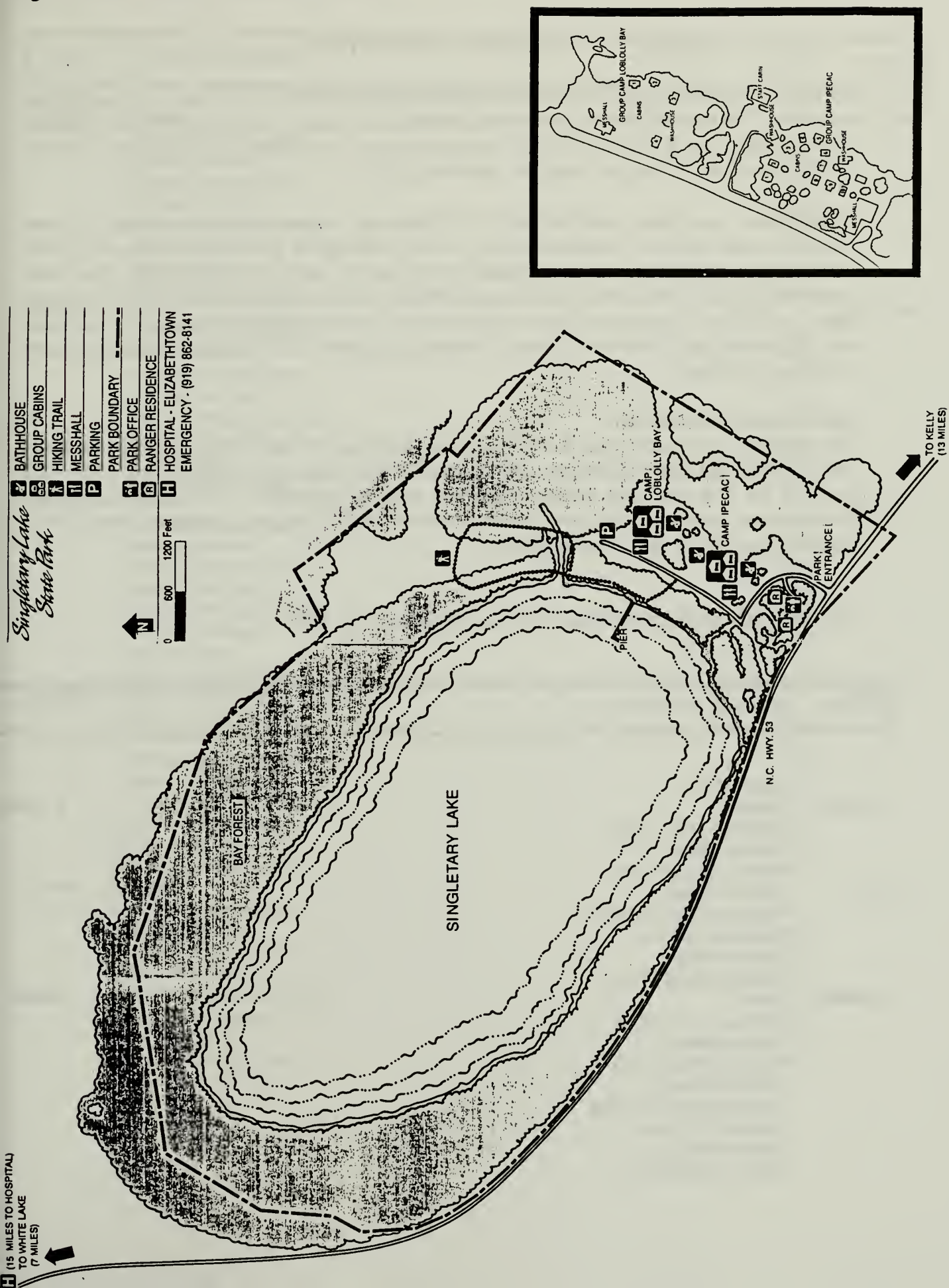
During a field evaluation of each facility, deficiencies are given priority ratings of critical, serious, or minor. The deficiencies are classified in nine basic categories: site (the grounds and walkways surrounding the building); exterior envelope; interior envelope; fire/life safety; handicapped accessibility; public health; heating/ventilation/air conditioning (HVAC); plumbing; and electrical.

The field evaluation begins with an inventory of all structures in the park. The results of the inventory are presented using the building name and state property numbers as identification. Next, the types of repairs and repair costs are listed for each building. Finally, the cost summary for the park is given using the nine basic categories of repairs (e.g. exterior envelope) and the three levels of deficiencies (critical, serious, and minor).

## SINGLETARY LAKE STATE PARK BUILDING INVENTORY

<u>CODE</u>	<u>BUILDING NAME</u>	<u>IN USE</u>
009001	Cabin	Y
009002	Cabin	Y
009003	Cabin	Y
009004	Cabin	Y
009005	Cabin	Y
009006	Cabin	Y
009007	Cabin	Y
009008	Cabin	Y
009009	Cabin	Y
009010	Cabin	Y
009011	Washhouse	Y
009012	Washhouse	Y
009013	Interpretive Building	Y
009014	Mess Hall	Y
009015	Storage Cabin	Y
009016	Superintendent's Residence	Y
009017	Warehouse/Office	Y
009018	Workshop	Y
009019	Garage	Y
009020	Pumphouse	Y
009022	Storage Building	Y
009023	Staff House	Y
009024	Kitchen-Mess Hall	Y
009025	New Cabin	Y
009026	New Cabin	Y
009027	New Cabin	Y
009028	New Cabin	Y
009029	Washhouse	Y
009030	Storage Shed	Y

Figure VII-1. Map of Building Locations





## STATUS OF FACILITIES

Facilities at Singletary Lake consist of two group camps and various operational and maintenance buildings. The maintenance and operations buildings are in good condition, with none requiring work totalling over \$10,000. Loblolly, the newer of the two camps, is in excellent condition; work required for the whole camp does not total \$1,000.

Camp Ipecac, in contrast, was built as a CCC camp and is showing its age. Siding is in poor condition, piers under the cabins are rotting, and all buildings in the camp should be re-roofed. Shutters are very heavy, and are typically top-mounted; they have pulled loose from their mounting beams so often that it has become difficult to find sound wood on which to re-hang them. In addition, the mess hall and the staff cabin should be re-wired; the mess hall also needs new bathrooms and kitchen equipment, including an Ansul fire suppression system and new coolers and freezers.

### Handicapped Accessibility:

The entrance to the park office is not accessible. Buildings at Camp Ipecac are not accessible, but NC Building Code requires that new buildings or renovation work totalling over 50% of the value of the structure must include making the building accessible. This would include the proposed new washhouse and renovations to the mess hall. The next logical step would be to make at least one of the cabins accessible.

**NOTE:** Only buildings needing work are included on this list.

BLDG. #	BUILDING NAME/NEED	DEMOLITION COST	REPAIR COST	TOTALS
	<b>CAMP IPECAC</b>			
009-001	<b>Cabin</b>			<b>\$ 9,966</b>
	Add hand rails at steps		120	
	Replace shutters		750	
	Replace damaged piers		300	
	Replace roofing		1,260	
	Replace damaged flooring		975	
	Replace all screens		1,185	
	Replace siding		4,776	
	Repair damaged trim		600	
009-002	<b>Cabin</b>			<b>\$9,407</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged piers		225	
	Replace roofing		1,320	
	Replace damaged flooring		1,110	
	Replace all screens		1,578	
	Replace siding		3,629	
	Repair damaged trim		600	



BLDG. #	BUILDING NAME/NEED	DEMOLITION COST	REPAIR COST	TOTALS
009-003	<b>Cabin</b>			<b>\$10,341</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged piers		600	
	Replace roofing		1,260	
	Replace damaged flooring		975	
	Replace all screens		1,185	
	Replace siding		4,776	
	Repair damaged trim		600	
009-004	<b>Cabin</b>			<b>\$10,208</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged piers		375	
	Replace roofing		1,320	
	Replace damaged flooring		1,110	
	Replace all screens		1,578	
	Replace siding		4,280	
	Repair damaged trim		600	
009-005	<b>Cabin</b>			<b>\$10,116</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged piers		375	
	Replace roofing		1,260	
	Replace damaged flooring		975	
	Replace all screens		1,185	
	Replace siding		4,776	
	Repair damaged trim		600	
009-006	<b>Cabin</b>			<b>\$10,208</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged piers		375	
	Replace roofing		1,320	
	Replace damaged flooring		1,110	
	Replace all screens		1,578	
	Replace siding		4,280	
	Repair damaged trim		600	
009-007	<b>Cabin</b>			<b>\$10,116</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged piers		375	
	Replace roofing		1,260	
	Replace damaged flooring		975	
	Replace all screens		1,185	
	Replace siding		4,776	
	Repair damaged trim		600	

BLDG. #	BUILDING NAME/NEED	DEMOLITION COST	REPAIR COST	TOTALS
009-008	<b>Cabin</b>			<b>\$9,908</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged pier		75	
	Replace roofing		1,320	
	Replace damaged flooring		1,110	
	Replace all screens		1,578	
	Replace siding		4,280	
	Repair damaged trim		600	
009-009	<b>Cabin</b>			<b>\$10,116</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged pier		375	
	Replace roofing		1,260	
	Replace damaged flooring		975	
	Replace all screens		1,185	
	Replace siding		4,776	
	Repair damaged trim		600	
009-010	<b>Cabin</b>			<b>\$9,983</b>
	Add hand rails at steps		120	
	Replace shutters		825	
	Replace damaged piers		150	
	Replace roofing		1,320	
	Replace damaged flooring		1,110	
	Replace all screens		1,578	
	Replace siding		4,280	
	Repair damaged trim		600	
009-011	<b>Washhouse</b>			<b>\$6,947</b>
	Replace damaged roof decking		188	
	Replace roofing		2,100	
	Rebuild vent		225	
	Replace siding		4,434	
009-012	<b>Washhouse</b>			<b>\$6,290</b>
	Replace roofing		1,740	
	Replace damaged screens		90	
	Replace siding		4,460	
009-013	<b>Interpretive Building</b>			<b>\$5,573</b>
	Add hand rails at steps		300	
	Replace shutters		780	
	Replace roofing		975	
	Replace siding		3,518	
009-014	<b>Mess Hall</b>			<b>\$157,739</b>
	Rewire building, replace lights with fluorescent		32,700	
	Add Ansul fire suppression system at range hood		2,250	
	Add ceramic tile to floor in food storage/prep areas		5,490	
	Replace damaged roof structure, decking and all shingles		16,545	
	Replace siding		17,693	
	Rebuild SE corner of building, including storage & toilets		75,000	
	Replace shutters, make various carpentry repairs		5,061	
	Replace all screens		3,000	

BLDG. #	BUILDING NAME/NEED	DEMOLITION COST	REPAIR COST	TOTALS
009-015	Storage Cabin	\$990		
009-023	Staff Cabin			\$25,620
	Replace wiring, lighting		12,600	
	Replace smoke detector with hardwired type		135	
	Add handrails at steps		300	
	Replace roofing		3,060	
	Replace siding		8,550	
	Replace shower stall		975	
SUBTOTAL- CAMP IPECAC		\$990		\$302,538
OPERATIONS/MAINTENANCE:				
009-017	Warehouse/Office			\$1,043
	Add egress lighting		144	
	Add H/A parking		171	
	Add ramp at office door		728	
009-018	Workshop			\$5,400
	Replace roofing, add rigid insulation			
009-020	Pumphouse			\$3,338
	Replace air compressor pump		1,950	
	Replace incandescent lights with fluorescent		90	
	Replace roofing		998	
	Add electric wall heater		300	
SUBTOTAL- OPERATIONS AND MAINTENANCE				\$9,781
CAMP LOBLOLLY				
009-024	Kitchen/Mess Hall			\$263
	Add emergency shut-off for deep-fat fryer		150	
	Replace switch		113	
009-026	New Cabin			\$105
	Patch inactive termite holes			
009-027	New Cabin			\$113
	Replace switch			
009-028	New Cabin			\$53
	Patch inactive termite holes			
SUBTOTAL- CAMP LOBLOLLY				\$534
PARK TOTAL		\$990		\$312,837

## FACILITY REPAIR NEEDS COST SUMMARY

DEFICIENCY CATEGORY	PRIORITY 1 (CRITICAL)	PRIORITY 2 (SERIOUS)	PRIORITY 3 (MINOR)	CATEGORY SUBTOTAL
Site	0	990	0	990
Exterior Envelope	1,194	145,408	20,804	167,406
Interior Envelope	5,490	85,425	0	90,915
Fire/Life Safety	4,185	443	0	4,628
Handicapped Access	0	898	0	898
Public Health	0	0	0	0
HVAC	0	300	225	525
Plumbing/Utility	0	2,925	0	2,925
Electrical	44,100	1,350	90	45,540
TOTAL:	54,969	237,740	21,119	313,827

Deficiencies that are a threat to fire and life safety or the health of an individual are considered to be "critical." A "serious" deficiency is one that is not considered a threat to fire and life safety, but which could cause further damage to the structure if left uncorrected. This category usually includes building code violations. "Minor" deficiencies are those requiring general maintenance and repair.



## ROAD AND UTILITY INVENTORY

This section gives a brief description of the park infrastructure (roads, water, sewer, electrical, and telephone) and makes general recommendations on upgrading and maintaining these systems. The information is based on a one-day park inspection of the park facilities on June 3, 1994. Other information comes from original construction drawings, past experience with construction projects at the park, and from the Institute for Transportation, Research and Education's (ITRE) study on roads.

Singletary Lake has two group camp areas consisting of the 88-person Camp Ipecac and the 48-person Camp Loblolly, constructed in 1938 and 1986 respectively. The support facilities for these camps — new park road, office and maintenance area, and superintendent's residence — were constructed in 1951-52. The last major capital improvement was the construction of Group Camp Loblolly, which was begun in 1981 and completed in 1986 at a cost of approximately \$180,000.

This section is divided into five parts: roads and parking areas, water system, sewer system, electrical system, and telephone system. Each part is further divided into existing conditions and system recommendations.

### Roads and Parking Areas

#### Existing Conditions

According to the ITRE study completed in March 1990, there are .35 miles of paved and .76 miles of unpaved roads at Singletary Lake. There are 1,117 square yards of paved parking lots and no unpaved parking lots. Parking for the group camps is included in length of unpaved roads. Soil parking areas are not considered unpaved parking lots under the ITRE study.

The typical road section consists of an 18-foot-wide pavement with a 4-foot-wide shoulder sloping to a 6-inch ditch. The main road has a stone base of unknown thickness with a 2-inch layer of I-2 asphalt. The two paved parking lots have a similarly paved surface.

The road shoulders are not seeded due to the sandy acid soil of this region. Most rain water percolates through the sand shortly after a rainfall. Water stands on the pavement at one location along the office road during heavy rains. There is no shoulder or way for the water to drain at this section. Water also stands on the pavement in front of the park office during rains.

The roadway generally follows the contour of the existing ground. Therefore, there are no crossline drainage pipes located along the roadway. There is no paint striping in the parking lots or centerline striping of the road.

The main park road and group camp parking lot were repaved in 1993. The office parking lot was repaved in 1992. Block cracking is beginning to show through the pavement at the maintenance office parking lot. This can be expected due to the type of sub-base that is underneath the roadway. Currently, there is \$500 allotted to NCDOT for scraping the group

camp road.

### Recommendations

1. Due to the current use of the two group camps, extending the pavement to the Group Camp Loblolly is not recommended. The roadway is used as a play area and provides campers with access to the lake.
2. Striping the parking lots and roadway centerline is recommended at an estimated cost of \$500.
3. The drainage problem in front of the office area and office road should be corrected. The estimated cost is \$1,500.
4. All work can be accomplished through the North Carolina Department of Transportation's (NCDOT) Road Maintenance Agreement.

## **Sewer Systems**

### Existing Conditions

There are currently six active sewer systems with septic tanks and drainlines. The largest system is at Camp Loblolly, which has a 5,000-gallon septic tank and an unknown drainfield size. The soil is very sandy and has a moderate water table. Sewage disposal presents few problems at this park. It was not possible, given time restraints, to inspect every tank, distribution box and drain line to make a proper evaluation of the sewer system. A visual inspection of all of the above ground components was made.

Camp Ipecac Mess Hall, Men's and Women's Washhouse Sewer System - This is a 3,000-gallon septic tank system with six 100-foot nitrification lines. It was constructed in 1962 to serve the two washhouses and mess hall. The system has 620 linear feet of six-inch terra cotta with three manholes on the system. The drainfield appears to be functioning adequately.

Camp Ipecac Staff Quarters System - This system is a 900-gallon septic tank system with three 100-foot nitrification lines. It also was constructed in 1962. The drainfield appears to be functioning satisfactorily.

Camp Loblolly Group Camp System - This system has two 1,500-gallon septic tanks laid end-to-end with a 1,000-gallon dual pump tank. The sewage is then pumped through a three-inch PVC force main 400 feet away to an existing 5,000-gallon septic tank. There are five nitrification lines of unknown length. It is unknown when this system was constructed. The pump tank and two 1,500-gallon septic tanks were installed in 1983 when the construction of Camp Loblolly took place. The mess hall has a 1,000-gallon grease trap.

Maintenance Shop Septic System - This system has a 600-gallon septic tank with one 125-foot nitrification line and was constructed in 1951. The exact location of the tank and lines was not

known. There appears to be no problem with the system.

Superintendent's Residence Sewer System - This system has a 600-gallon septic tank with two or three 100-foot drain lines. The system drainfield was replaced approximately five years ago, but the original tank, installed in 1951, is still in use.

Mobile Home Site (Former Ranger Residence) - The system has a conventional 1,000-gallon septic tank with two 100-foot drain lines and is approximately 20 years old.

### Recommendations

1. Install risers on the septic tank and check all septic tank sludge levels that have not been pumped within the last three years. Pump out as necessary. The estimated cost is \$4,000, including five risers.
2. Install time-lapse counters on the pump controls, and purchase a spare sewage pump for Camp Loblolly.
3. Install water meters at the men's and women's washhouse and at the mess hall at Camp Ipecac. The estimated cost is \$1,500.
4. Purchase a spare sewage pump for the Camp Loblolly lift station. The estimated cost is \$750.

## **Water System**

### Existing Conditions

The park is supplied water by a single six-inch diameter water well with a 20-foot stainless steel well screen. Records indicate it was drilled in 1963. The well is 167-feet deep, and the yield is 50 gallons per minute. A new pump and control was installed in 1985. The size of the submersible pump is 1-1/2 HP. The water quality is good.

The pump house has a 1,000-gallon galvanized storage tank with an air compressor and a chlorinator feed pump system. The tank saddle was replaced in early 1995. The tank has begun to show signs of deterioration.

The water distribution system consists of a 2-1/2 inch galvanized main distribution line that feeds Camp Ipecac approximately 1,200 feet away. Various size service connections feed off this main to the camp facilities. The water distribution system that feeds Camp Loblolly consists of a 2-inch Schedule 40 PVC water main that ties in at Camp Ipecac and runs along the group camp road to Camp Loblolly approximately 1,000 feet away. This was installed in 1983. The service connection to the camp facilities at Camp Loblolly are PVC pipe. The water service connections to the maintenance shop, superintendent's residence, and mobile home site are galvanized pipe.



### Recommendations

1. The present galvanized water distribution system is approximately 30 years old. Although it has not been giving the park much trouble, it has reached its life expectancy. A capital project to replace all galvanized piping and water storage tank, chlorinator, and controls should be implemented. The estimated cost is approximately \$40,000. This cost could be included in the cost of the renovation of the Camp Ipecac project.
2. The park should tie into the county-wide water system if lines are ever run to that area of the county.

## **Electrical Distribution System**

### Existing Conditions

Power is supplied to the park by Four County Electric Membership Corporation located in Burgaw, North Carolina. The primary power runs overhead from the main line located on NC 53 to the power pole behind the existing office building; it then runs overhead to a pole behind Camp Ipecac. All electric service to the park facilities has underground secondary feeder lines. Camp Ipecac has two electric service meters served by underground feeder lines. Camp Loblolly's power is supplied by an underground primary feed line from the overhead service pole at Camp Ipecac. It then runs to a pad mounted transformer located behind the mess hall area approximately 700 feet away. This camp has one meter to measure its power usage.

### Recommendations

Current park standards require that all overhead power distribution lines be installed underground. Since all feeder lines are underground, the recommendation is to install the overhead main feeder underground after major capital development is planned. The estimated cost to install the lines underground is \$25,000.

## **Telephone System**

### Existing System

There are three phone lines serving the park office and maintenance shop, which has four phones. One line serves the fax, the second the Mobile Radio-Telephone Interconnect System (MARTI), and the third is the main telephone line. The superintendent's residence has a private line, and there is a public telephone located at the head of the lake trail. The phone system is owned by Star Telephone Membership Corporation located in Clinton.

### Recommendations

No changes are recommended at this time. The phone service will continue to be maintained by the phone company.



## MAJOR CAPITAL IMPROVEMENT PROJECT PRIORITIES

The Singletary Lake State Park Master Plan describes the long-range vision of what the park should be. A significant portion of the master plan is devoted to identifying short- and long-term development plans for the park. The development plans are to be implemented by identifying and detailing specific capital improvement projects that can be constructed through the state construction process. By identifying, evaluating and ranking each development project, the Division has created a priority list of capital improvement projects for each park and for the state parks system. The Singletary State Park project ranking is based upon objectives such as promoting public health, protecting natural resources, enhancing environmental education, increasing public accessibility, and improving the park's appearance.

As a part of the general management plan process, the master plan with its proposed development was carefully reviewed to determine if changes were needed. Such a review had not been undertaken since the master plan was published in 1976. Changes in development plans were deemed necessary. The original development project list, recommended changes to that list, and the revised project list follow.

In reviewing master plan capital improvement recommendations, the general management plan evaluation team considered factors such as changes in environmental regulations, condition of facilities, natural heritage inventory, changes in recreation demand, park visitor safety considerations, State Parks Act stipulations, and current recreation demand. This review of proposed capital improvements resulted in changes, additions, and deletions to capital improvement proposals.

**Table VII-1. Pre-GMP Project Priority List**

RANK	DESCRIPTION	MEAN SCORE*	TOTAL COSTS
1	Group camp and building renovations	530	\$ 572,700
2	Repave main road	496	\$ 57,100
3	Visitor center/picnic area/road	483	\$ 762,500
4	Utilities renovation	416	\$ 66,300
5	Ranger residences (2)	408	\$ 231,900
6	Lake access improvements	386	\$ 29,200
7	Trail improvements	372	\$ 113,700
		<b>TOTAL:</b>	<b>\$1,833,400</b>

\* The mean score comes from the Division's Project Evaluation Program (PEP). The PEP uses an evaluation formula to rank projects that considers three factors: the objective of the project; the justification or urgency for funding; and the estimated annual number of persons (visitors and/or employees) who are affected by the project. Projects are evaluated by the park superintendent, district superintendent, and Division management.

## Recommended Changes to Project Priority List

### Projects with Revised Cost Estimates and Unchanged Scopes

Lake Access Improvements (\$31,287) - Handicap access to the main pier remains unchanged, but costs revised for inflation through projected funding date.

### Projects to be Deleted

Repave Main Road (\$57,100) - Work will be accomplished under the NCDOT Road Work Agreement.

Trail Improvements (\$113,700) - Recent GMP Inventory/Condition Report recommended a decrease in the intensity of development of the trail system. The remaining improvements were minor and fell well below the requirements to have a separate capital improvement project.

Utilities Renovation (\$66,300) — Utilities renovation will become a part of the Group Camp and Building Renovation project rather than be undertaken as a separate project.

### Projects with Changed Scopes

Group Camp and Building Renovations (\$1,077,400) - Adds a classroom facility, ranger residence and remaining utility repair work to original scope to reinforce the environmental education mission of the park. Cost estimate increased to include proposed additions.

Visitor Center, Picnic Area and Road (\$860,200) - Adds a boat rental dock to the lake overlook area for greater visitor interest and increased day use.

Ranger Residence (\$122,800) - Reduced from two to a one-residence project. The second residence was added to the cabin renovation project because its need was closely tied to the classroom and interpretive function of that project. The proposed residence will provide the minimum division standard for parks with overnight facilities.

**Table VII-2. Revised Project Priority List**

RANK	DESCRIPTION	MEAN SCORE	TOTAL COSTS
1	Group camp & building renovations, residence, classroom	658	\$1,077,400
2	Visitor center/picnic area/road	550	\$ 860,200
3	Ranger residence	540	\$ 122,800
4	Group camp access to lake improvements	496	\$ 30,900
	TOTAL:		\$2,091,300

## VIII. PARK OPERATIONS

### INTRODUCTION

The major issues concerning Singletary Lake were identified by Division of Parks and Recreation staff at the initiation of the general management plan process. The issues have been divided into three categories: natural resources (see Chapter VI), capital improvements (see Chapter VII), and operations. This chapter identifies park operations issues at Singletary Lake and makes recommendations for addressing them during the next five years.

Operations/management issues that are of significant concern at Singletary Lake are:

1. Trail System Needs
2. Staffing Levels
3. Operating and Equipment Budget

### TRAIL SYSTEM NEEDS

Singletary Lake Park has one trail within its boundaries, the Singletary Lake Trail. This trail begins at the group camp area and runs to the lake, a distance of 690 feet. The trail then follows the perimeter of the lake for 1443 feet to the relocated nature hut. From this point the trail traverses the bay community of the park, crosses the spillway canal, and circles back to the nature hut, covering a distance of 1,857 feet.

The condition of the trail's tread surface of compacted soil is generally good. There are some exposed roots in the trail tread, but they don't present a substantial problem. The final 1470 feet of trail is the result of a relocation project. This section of trail has been flagged with some brush removal. The trail corridor should be brushed and adequately marked to ensure visitor safety. The trail crosses over the spillway canal without a bridge. A 10-foot bridge would improve the trail at this location. The maintenance requirements for the 3,990 foot Singletary Lake Trail consist of two annual mowings and one annual brush cutting for the sides and top of the corridor.

The current trail is available for use only by the group campers. The park is visited by others who desire the use of park facilities. Presently, there are no facilities for these visitors. The park staff has studied the possibility of establishing a one-half mile trail near the park office. This trail would traverse a sand ridge and could possibly follow the edge of the bay community of the park. The development cost for this new trail would be \$1.00 per foot or \$2,640. The maintenance of this new trail would not present an undue burden on the park staff.

Singletary Lake has four miles of shoreline that could offer an interesting experience for the canoeist. Although the lake does not have any marked canoe trails, a canoe trail along the shoreline could easily be established by placing markers at half-mile intervals. The cost for signing this trail would be approximately \$50 per mile. The addition of any other trail facilities



will cost approximately the same as outlined above. The addition of new trails to the park should include additional staffing for operation and maintenance.

### **Current Budget Requirements for Singletary Lake Trail**

Annual maintenance 3,990 feet @ .20/ft.	\$ 798.00
Parkwide Trail Sign System	3,000.00
Construct 10 foot bridge, 3 feet wide @ 10.00/ft.	100.00

### **Future Trail Construction Needs**

Construct 2,640 feet of trail @ \$1.00/ft.	\$2,640.00
Annual Maintenance 2,640 feet @ .20/ft.	528.00

### **STAFFING LEVELS**

Singletary Lake does not have sufficient personnel to meet the programming and operational requirements of the park. In addition to the group camp operation at Singletary lake State Park, the staff is also responsible for the pier permit procedure at White Lake, Baytree Lake, and Lake Waccamaw. White Lake is the most popular fresh-water-based recreational destination within the southeastern region of the state. Swimming, boating, skiing, and sailing are among the popular activities enjoyed by thousands of visitors. The current staff does not meet the Division's minimum staffing requirements necessary to provide at least one professional staff person on duty at all times to respond to health and public safety needs. The present staff consists of a park superintendent II, ranger II, clerk-typist, and a maintenance mechanic III.

Recommendation: A ranger is needed at Singletary Lake to provide for minimum visitor safety and to meet the current demands for environmental education and resource management. Another ranger is needed for lake patrol as well as permit processing and compliance at White Lake.

### **OPERATING AND EQUIPMENT BUDGET**

The operating budget for Singletary Lake State Park does not provide adequate funds to meet all visitor services and maintenance needs. The increases in the operation and equipment budgets recommended in this section address the need under present circumstances only. The increases in staffing, facilities, and services identified in other sections of the GMP will also be accompanied by increases in operating and equipment budgets.

Table VIII-1. Fiscal Year '94-95 Operating Budget Allotments and Needs

LINE ITEM	OPERATING BUDGET ALLOTTED	OPERATING BUDGET NEEDS	RECOMMENDED INCREASES
1411 Temporary Wages	\$ 578	\$1,000	\$ 422
1491 Seasonal Wages	2,857	3,000	143
2100 Janitorial Supplies	2,974	3,500	526
2130 Uniforms & Clothing	1,688	1,688	0
2300 Ed/Scient & Agric Supplies	284	500	216
2360 Medical Supplies	73	100	27
2400 Construct & Repair Supplies	4,847	5,500	653
2510 Motor Fuels & Lubricants	1,188	1,500	312
2530 Parts	146	200	69
2540 Motor Vehic.Repairs	18	1,000	982
2560 Boat Operations	20	500	480
2590 Hvy. Equip. Repair	14	86	0
2600 Office Supplies & Materials	1,688	2,000	433
2900 Other Supplies	828	982	4
3112 Travel In-State Subsistence	145	200	55
3115 Travel Out-of-State Transp.	1,188	4,190	4
3210 Telephone	2,525	2,800	275
3250 Postage	481	550	69
3310 Electricity	8,130	9,000	480
3320 Fuel Oil	828	214	0
3330 Natural Gas	8,130	1,200	64
3400 Printing/Binding & Reproduc.	86	86	0
3500 Other Repairs & Maint.	8,130	3,000	591
3600 Freight & Express Deliv.	4	4	0
3700 Advertising	35	35	0
3900 Other Services	331	331	0
TOTALS	\$36,768	\$42,340	\$6,172

Table VIII-2. Operating Equipment Needs

LINE ITEM		COST
5100 Office Furniture & Equip.	Laminator Machine	\$1,000
5200 Data Processing Equip.	Computer	\$2,600
5300 Educ./Med. & Agric. Supplies	Slide Library Storage Cabinet	\$2,000
	Spotting Scope	\$ 800
	Microscope	\$1,000
5430 Boats & Trailers	Canoe Trailer	\$ 950
5500 Other Equipment	Pressure Washer	\$2,600
	Commercial Refrigerator/Freezer	\$3,000
	2 Commercial Microwaves	\$2,000
	Ice Machine	\$2,000
	Disk Blade/Tractor	\$ 800
	Blade for Tractor	\$ 700
	Paint Sprayer	\$1,500
	Auger for Tractor	\$2,000
	4 x 4 ATV w/Trailer	\$6,000
	Boat Lift	\$1,000
TOTAL:		\$29,750



## IX. LAND ACQUISITION NEEDS

### LAND ACQUISITION STATUS AND FUTURE NEEDS

Singletary Lake State Park presently contains 649 acres of land and 572 acres of water for a total of 1,221 acres. An outstanding mineral reservation owned by the United States underlies the park lands. (See Chapter VI of the GMP for additional information.)

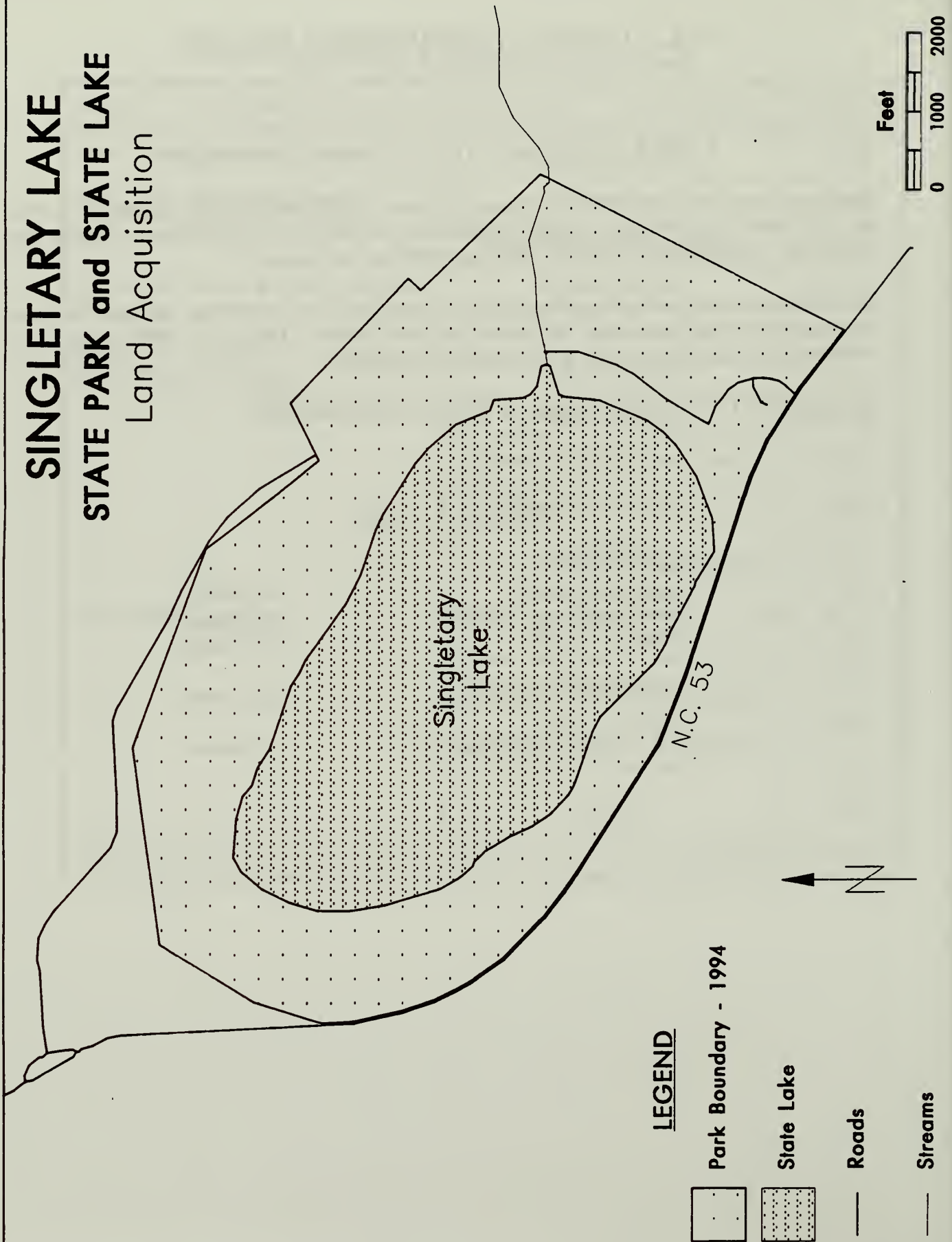
The original master plan for the park called for no additional land acquisition, and there has been no acquisition at the park since the master plan was written. During the GMP process, no additional land acquisition needs at the park were identified.

See Figure IX-1 for the park boundary at Singletary Lake State Park.

### SUMMARY TABLE

1994 Size of the Park	
Land	649 acres
State Lake (water surface)	<u>572 acres</u>
Total	1,221 acres
Master-planned Size of the Park	1,221 acres
Additional acquisition recommended	0 acres

# SINGLETERY LAKE STATE PARK and STATE LAKE Land Acquisition



## **APPENDIX A**

### **PARK PROFILE**





## SINGLETARY LAKE STATE PARK PARK PROFILE

### PARK PURPOSE STATEMENT

Singletary Lake has a long history of public ownership. In 1827, legislation passed that prohibited the lands covered by the waters of any lake within North Carolina from being recorded for private ownership. In 1911, the General Assembly passed legislation declaring that certain lakes containing 500 acres or more, including 572 acre Singletary Lake, were not to be sold but should "...always be and remain the property of the State of North Carolina for the use and benefit of all the people of the state." This legislation clearly indicates the public trust nature of Singletary Lake.

In order to create jobs during the 1930s, the federal government undertook conservation programs. Submarginal farm lands in the Bladen County area, including those around Singletary Lake, were purchased. Under management of the Resettlement Administration from 1936-1939, recreation facilities were constructed at Singletary Lake. The area was leased to the state in July 1939, and in October 1954 the land surrounding Singletary Lake was given to the state by the federal government. The deed requires that the land be used for public purposes. Additional recreation facilities constructed with federal Land and Water Conservation Fund assistance requires that the park be maintained and used only for public outdoor recreation purposes.

Singletary Lake State Park contains three high quality natural community types: Coastal Plain Small Stream Swamp (Blackwater Subtype); Pond Pine Woodland; and Xeric Sandhill Scrub. The Turkey Oak Registered Natural Heritage Area encompasses 155 acres along the lake's northeast shore. It includes a portion of the sand rim surrounding the large Carolina bay. Species of special interest in or near the registered area include the white wicky (*Kalmia cuneata*), the Venus flytrap (*Dionaea muscipula*), and the red-cockaded woodpecker (*Picoides borealis*). Turkey oak and longleaf pine dominate the sand rim, while pocosin vegetation, including Atlantic white cedar, dominates the shoreline.

Carolina bays are found only in North Carolina, South Carolina, and Georgia. The bays are found in the loose, unconsolidated sands that form a cover within the Atlantic Coastal Plain, with the greatest concentration of bays in Bladen County. Their origin has long been a matter of speculation and debate. Carolina bays are shallow, oval depressions oriented in a southeast-northwest direction. Singletary Lake is a classic example of a water-filled Carolina bay. It has a shallow bottom with the deepest point southeast of the bay's center, and it has a raised sand rim, best developed at the southeast end. The shorelines vary from sand to peat. Peat deposits also surround the lakes and fill the non-lake remainder of the bays. The term "bay," in this case, refers to the distinctive vegetation - such as loblolly bay - that slowly fills these depressions. Only a few bays still contain water. Most have filled naturally with sediment and vegetation.

Singletary Lake State Park's small land base prohibits offering a diversity of recreational activities. The park serves to complement day recreational use at other nearby state lakes by offering organized groups overnight interpretation and education and extended stay recreation in a peaceful, natural setting. It provides two group camps that offer opportunities for unique camping experiences and fellowship. Uses of the park include swimming, boating, hiking, sunning, fishing and nature study. The primary interpretive theme focuses on the Carolina bay. Recreational activities are appropriately limited to preserve the quality of the recreational experience and to protect the park's outstanding natural resources.

Singletary Lake State Park offers outstanding scenic vistas of its lake and undeveloped shoreline. The

broad expanses of tea colored water, the barren sand lake rims, and the dense, vegetative filled bay forest are in stark contrast to one another. In places, beautiful large bald cypress trees hung with Spanish moss line the shore or grow in the shallow water. The trail offers a unique opportunity to walk through and view densely vegetated bog areas of a Carolina bay, the desert-like appearance of the sand rim, and lovely lakeside flora.

Singletary Lake State Park contains a significant example of depression-era public works architecture. Camp Ipecac, built by the Civilian Conservation Corps in the 1930s, is an unusually intact and complete grouping of CCC buildings.

Singletary Lake State Park exists so its valuable biological, geological, recreational, scenic, and cultural values can be protected and because of the value of Singletary Lake as a public trust resource. The Division is charged with preserving these values and providing park experiences that promote pride in and understanding of North Carolina's natural heritage.

### PRIMARY INTERPRETIVE THEMES

**Carolina Bay Ecology:** The physical and biological characteristics of a Carolina Bay will be studied through measurement and sampling.

**Origin of Carolina Bay:** Photographs, models, games and investigations will be used to test some of the 29 theories explaining the formation of Carolina Bays.

### STATISTICS

Visitation (1994)	13,472
Operating Budget (FY 93-94)	\$ 162,977
Revenue (FY 93-94)	\$ 10,217

### EXISTING VISITOR FACILITIES

Group Camps (2)	Ranger Residences (2)
Boating	Maintenance Area
Trails (1 mile)	Pier

### CONSTRUCTION AND RENOVATION NEEDS

1.	The <b>group camp and building renovations</b> project adds a classroom facility, ranger residence, and utility repair work to original scope to reinforce the environmental education mission of the park.	\$1,077,400
2.	The <b>visitor center/picnic area/road</b> project will provide a new main access road, a visitor center, public picnic area, shelter, parking, and utilities.	860,200
3.	The <b>ranger residence</b> project will provide the minimum division standard for parks with overnight facilities.	122,800
4.	The <b>group camp access to the lake improvements</b> project will improve the main lake access path to meet handicap requirements.	30,900
<b>TOTAL:</b>		<b>\$2,091,300</b>



**REGISTERED NATURAL HERITAGE AREA**

**Turkey Oak Registered Natural Heritage Area:** This area covers 155 acres along Singletary Lake's northeast shore. It includes a portion of the sand rim surrounding the lake, which is a large water filled Carolina Bay. Rare plant and animal species in or near the registered area include the Venus Flytrap, white wicky, and the Red Cockaded Woodpecker. Turkey oak and longleaf pine dominate the sand rim; pocosin vegetation, including Atlantic White Cedar, dominates the shoreline. The Natural Heritage Program has identified three natural community types in this area: 1. Coastal Plain Small Stream Swamp (Blackwater Subtype); 2. Pond Pine Woodland; and 3. Xeric Sandhill Scrub.

**FUTURE LAND ACQUISITION NEEDS**

Master Plan Total Acreage	1,221 acres
Current Park Acreage	<u>1,221 acres</u>
Acquisition Needs	0 acres

**STAFFING**

<u>Permanent</u>		<u>Seasonal</u>		<u>Peak Load</u>	
<b>Current Positions</b>					
Park Superintendent II	1	General Utility Worker	1	Park Attendant	1
Park Ranger II	1				
Maintenance Mechanic III	1				
Clerk Typist III	1				
<b>Proposed Additions</b>					
Park Ranger	2				







